



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

XXII. A CONTRIBUTION TO THE KNOWLEDGE
OF THE FLORA OF SOUTHEASTERN
MINNESOTA.

William A. Wheeler
W. A. WHEELER.

The work of the Minnesota Botanical Survey in southeastern Minnesota during the summer of 1899 was carried on with two main purposes in view: first, to collect and preserve plants in formalin for museum and class use, and second, to collect herbarium specimens of the higher seed plants. The work of collection was begun June 1st, and closed August 31st. The catalogue of species is, therefore, very incomplete in its enumeration of the early spring and autumn plants.

District of collection.—The territory in which the collections were made is in the extreme southeastern part of Minnesota, comprising the valleys of Winnebago and Crooked creeks, and the adjoining region near the Mississippi river. Nearly all of this territory is included in an area about twelve miles square, formed by the townships of Mayville and Crooked Creek, on the north, and Winnebago and Jefferson on the south.

Physiography.—The topography of this part of Houston county is not essentially different from that of most of the region south from Red Wing along the Mississippi river to the southern boundary of Minnesota and into Iowa. There is no part of it level or nearly so. It is almost entirely broken by the valleys of the two creeks and their smaller tributaries. The height above the sea level varies from 620 feet at the level of the Mississippi river in the southeastern corner of Jefferson, to 1200 feet in the northwestern corner of Mayville. Crooked creek, from the source of the north fork to its discharge into Bluff slough, is about eleven miles in length. It drains about 65 square miles of territory. The south fork, a branch about three miles long, lies entirely in Mayville. Winnebago creek from the Big spring near its source, to its discharge into Min-

nesota slough, is about twelve miles in length. There are three small branches, one of which has, within the last decade, become considerably smaller than it formerly was, on account of the drying up of several springs near its source. The amount of water discharged from each of the two main creeks during the summer months is probably not less than 1,500,000 cubic feet per day. Neither creek is very susceptible to changes of season, but either one will rise very rapidly after a sudden heavy rain-fall and return to its usual level in a few hours.

The bluffs are high and steep, and not adapted to cultivation. (Plates XXII. and XXVI.) However, many of the ridges are cultivated and form some of the best farms in this part of the state. The valleys being subject to overflow and the bluffs very steep, by no means the entire area is adapted to cultivation. This condition is very favorable for the collection of native plants.

The valleys are narrow, in no place exceeding a mile in width from the brow of one bluff to the brow of the one opposite.

In taking a view of the ecological groups of the plants inhabiting this region, the territory may, for convenience, be divided into river valley, creek valleys and bluffs.

The river valley is so distinct from the creek valleys that it is almost imperative that it be considered separately. The bluffs along the river vary somewhat from the other bluffs, but not sufficiently to warrant a division into river bluff and creek bluff.

River valley.—In the river valley I include the area from the foot of the bluffs on one side of the river, to the foot of the bluffs on the opposite side, not including any tributaries. Along this stretch of the river, from New Albin, Iowa, to Brownsville, Minnesota, the valley varies from three to five miles in width. The main channel of the river is from one-half a mile to a mile wide. The remainder of the area between the bluffs is formed of islands, sloughs and lakes during most of the year. (Plate XXV., B.) During the spring and early summer the whole area is generally flooded so that collection can be carried on only during the late summer and autumn. The river channel proper is not a fruitful field for the collection of higher plants. The sluggish sloughs, lakes and ponds, however, offer excellent conditions for such collection.

For consideration, the water plants of the river valley may be classified into four main groups: plankton, attached submerged aquatic, attached aquatic plants with natant leaves, and adaptive shore plants.

PLANKTON.

The plants forming this group are those which are not attached to any soil substratum, and so are rarely found in any of the swift-flowing currents, but rather on the surface of protected lakes and ponds and near the high banks of sloughs, where they are protected from rapid currents of wind and water. The plants comprising this group are:

<i>Azolla caroliniana</i> ,	<i>Spirodela polyrhiza</i> ,
<i>Ceratophyllum demersum</i> ,	<i>Utricularia vulgaris</i> .
<i>Lemna minor</i> ,	

With them are often found plants of *Sagittaria* and *Potamogeton* which have been dislocated from their original position on the soil. They seem to grow nearly as well and bloom nearly as profusely as when attached. In this condition they form part of the plankton, but as they are originally attached and ordinarily remain so, I have not included them in the list of plankton types.

One of the most beautiful and interesting plants of this group is the small heterosporous fern, *Azolla caroliniana*. In the early part of the summer it is green or but slightly red in color and only scattered plants or very small patches can be found. In the later summer and autumn it covers large areas of water with a deep red pure growth or mixed with the duckweeds. In restricted areas it often grows so rapidly late in the summer that it is pushed up from the surface of the water and forms ridges and bunches above the water-level.

ATTACHED SUBMERGED AQUATIC PLANTS.

The floor of some of the very shallow ponds and sloughs is covered with a growth of bassweeds and pondweeds that are entirely immersed. This group contains but few species of the higher plants. The species collected are:

<i>Najas flexilis</i> ,	<i>Potamogeton pusillus</i> ,
<i>Najas guadalupensis</i> ,	<i>Potamogeton zosteræfolius</i> .

ATTACHED AQUATIC PLANTS WITH NATANT LEAVES.

Castalia tuberosa,
Nelumbo lutea,
Nymphaea advena,

Potamogeton lonchites,
Potamogeton natans,
Sagittaria cuneata.

Nearly every one who has ever visited any of the lakes or rivers of Minnesota is acquainted with at least one representative of this group, the white water-lily, *Castalia tuberosa*. This with the Indian lotus, *Nelumbo lutea*, and the yellow pond-lily, *Nymphaea advena*, all of which are members of the water-lily family, are the most conspicuous and beautiful of our river plants. They cover large areas of shallow water for sometimes a mile or more in extent. It may be of interest to call attention to the methods of adaptation of these plants to their aquatic habitat. The white water-lily and the yellow pond-lily carry their natant leaves on long flexible petioles which allow the leaves to remain upon the surface for variations of several feet in the height of the water. The Indian lotus, however, carries the leaf-blades upon stiff strong petioles some of which are carried up to the water surface and others are raised from one to three feet above the water. (Plate XXV., A.) In case the water rises the natant leaves are destroyed but those that are raised above the surface remain useful to the plant and may in this way be caused to float. The projecting leaves are not conspicuously modified in any way from those that were originally natant.

Both the Indian lotus and the white water-lily are abundant in the sloughs of the Mississippi river at Jefferson. The yellow pond-lily is not so abundant as either of the other two. The *Potamogetons* with floating leaves may be found growing with the water-lilies or in small patches scattered throughout the sloughs. They never cover very large areas to the exclusion of other plants.

ADAPTIVE SHORE PLANTS.

Alisma plantago-aquatica,
Eleocharis acicularis,
Nelumbo lutea,
Polygonum emersum,

Sagittaria latifolia,
Sagittaria rigida,
Scirpus lacustris.

The plants living on the shores of the lakes and sloughs must adapt themselves to life under the varying conditions in which they may be placed by the rise and fall of the water. During

low stages they may be left out of the water entirely and when the water is at its height most of them are nearly or quite submerged. The plants adapting themselves to these conditions might be considered as the *Sagittaria* group, for the two *Sagittarias*—*latifolia* and *rigida*—are the most abundant shore plants with the possible exception of *Eleocharis acicularis*. *Nelumbo lutea* may often be seen in times of very low water, growing on the muddy banks entirely emerged holding its leaves erect two or three feet above the mud, while the *Castalia* when placed under these conditions lodges its leaves on the mud where they soon die. *Polygonum emersum* covers many banks to the exclusion of other vegetation. It is adapted to living on the exposed mud or in the water but under the latter conditions it always projects its leaf-bearing stems out of the water and keeps the foliage leaves emerged.

WET MEADOWS OF THE RIVER VALLEY.

During a large part of the growing season the wet meadows of the river bottoms are submerged. When they are exposed for a sufficient length of time to become somewhat dry the grasses are generally cut for hay. The plants living under these conditions are mostly coarse grasses and sedges. No trees but willows seem to be able to live upon these meadows and they do not then attain tree size. Some of the plants forming the vegetation of the wet meadows are:

<i>Asclepias incarnata,</i>	<i>Scirpus atrovirens,</i>
<i>Cyperus esculentus,</i>	<i>Scirpus cyperinus,</i>
<i>Eleocharis acicularis,</i>	<i>Sium cicutaeifolium,</i>
<i>Elymus virginicus,</i>	<i>Sparganium eurycarpum,</i>
<i>Eragrostis hypnoides,</i>	<i>Spartina cynosuroides,</i>
<i>Eupatorium purpureum,</i>	<i>Vernonia fasciculata,</i>
<i>Homalocenchrus virginicus,</i>	<i>Zizania aquatica.</i>
<i>Penthorum sedoides,</i>	

MUD-FLAT VEGETATION.

The mud-flat comprises the highest land of the islands. It is flooded only during the early summer but on account of its growth of timber and shrubs the soil remains wet during the entire year. The largest trees growing anywhere in this region are found on the mud-flats of the Mississippi river.

The plants which form large trees on the islands are :

<i>Acer saccharinum</i> ,	<i>Populus deltoides</i> ,
<i>Betula nigra</i> ,	<i>Quercus platanoides</i> ,
<i>Fraxinus lanceolata</i> ,	<i>Salix amygdaloides</i> ,
<i>Fraxinus nigra</i> ,	<i>Ulmus americana</i> .
<i>Gleditsia triacanthos</i> ,	

The following species do not attain large size, but are either scattered throughout as shrubs or small trees, or form a dense low growth on some of the lower grounds of the mud flat. (Plate XXV., A.)

<i>Cephalanthus occidentalis</i> ,	<i>Salix fluviatilis</i> ,
<i>Cornus amomum</i> ,	<i>Salix nigra</i> .

Three species of woody vines are common throughout the islands. The Virginia creeper, *Parthenocissus quinquefolia*, and wild grape, *Vitis vulpina*, are abundant, covering and in many cases killing large trees. The climbing poison ivy, *Rhus radicans*, is common throughout the most densely wooded parts. It sometimes climbs to a height of twenty-five or thirty feet, and develops a stem from two to three inches in diameter.

During the late summer and autumn the mud-flat throughout is covered with a dense growth of coarse herbs most of which are perennials.

The following herbaceous plants grow on the mud-flat.

<i>Acnida tamariscina</i> ,	<i>Mimulus ringens</i> ,
<i>Apocynum cannabinum</i> ,	<i>Onoclea sensibilis</i> ,
<i>Arisæma dracontium</i> ,	<i>Polygonum hartwrightii</i> ,
<i>Bidens comosa</i> ,	<i>Polygonum hydropiperoides</i> ,
<i>Bidens frondosa</i> ,	<i>Polygonum incarnatum</i> ,
<i>Bidens lævis</i> ,	<i>Polygonum punctatum</i> ,
<i>Cicuta bulbifera</i> ,	<i>Polygonum virginianum</i> ,
<i>Helenium autumnale</i> ,	<i>Physalis philadelphica</i> ,
<i>Ilysanthes gratioides</i> ,	<i>Physostegia virginiana</i> ,
<i>Lippia lanceolata</i> ,	<i>Ranunculus pennsylvanicus</i> ,
<i>Lobelia cardinalis</i> ,	<i>Scutellaria lateriflora</i> ,
<i>Lycopus americanus</i> ,	<i>Stachys palustris</i> ,
<i>Lycopus lucidus</i> ,	<i>Steironema ciliata</i> ,
<i>Lycopus rubellus</i> ,	<i>Teucrium canadense</i> ,
<i>Lycopus virginicus</i> ,	<i>Urtica gracilis</i> ,
<i>Lythrum alatum</i> ,	<i>Urticastrum divaricatum</i> .
<i>Mentha canadensis</i> ,	

Creek valleys.—The valleys of the creeks present an entirely different aspect from the river valley. The creeks have their own well-defined channels to which they hold almost the year round. High waters never last for any great period of time. Those which are caused by the melting of the snows in the spring generally last from about noon to sun-down while those which are supplied by the heavy June showers generally rise and fall during the night or very early morning. The damage done to vegetation is almost restricted to the floods of the summer months. They come in the season of most rapid growth and destroy a large part of the season's growth with which they come in contact. The areas inundated by these floods are never very extensive compared to those along the river. At most points along the valleys the gradual rise of the land from the creeks to the bluffs is sufficient to prevent the formation of ponds and lakes by the rise of the water. The alluvial soils deposited on the flats do not dry up until late in the summer and so have very little growth besides coarse weeds. They are often cultivated but there is always the danger of the crops being destroyed by high water. Most of the best cultivated fields in the valleys are on the table lands adjacent to the foot of the bluffs. They are generally fertile, are protected from high water and hard winds and are not in a position to wash to any great extent. The steep banks on the north edges of the table lands are generally wooded and bear the richest and greatest variety of plants that can be found anywhere in this region. The table lands are often very sharply marked off from the creek bottoms and steep bluffs. Towards the heads of the creeks the table lands disappear and there is a gradual rise from the creeks to the bluffs.

The water vegetation of the creek valleys is almost entirely limited to the cold water plants of the springs and small streams. There are very few ponds or marshes to contain still water forms.

The vegetation of the land may be divided into that of the wet meadow, moist woods and mesophytic field. The wet meadow is about on a level with the banks of the creeks. It never becomes very dry and on the lower places shows some of the characters of a marsh. The vegetation of the moist woods is well shown on the wooded banks bordering the table lands. Moist woods often cover some of the protected table lands and

extend for some distance up the narrow dark ravines. In places where timber covers the flooded areas the vegetation is similar to that of the mud flat on the islands near the river. The vegetation of the open table lands I have called mesophytic field.

COLD SPRING VEGETATION.

The valleys of Winnebago and Crooked creeks have a great many springs arising from the bases of the bluffs throughout their whole length but perhaps more numerous at the heads of the creeks than elsewhere. Some of the springs that outlet in low level land occasionally form small cold bogs in which the ordinary cold water plants find very favorable conditions for growth. A large spring near the head of Clear creek, a short branch of Crooked creek contains the greatest abundance of typical cold water plants of any spring visited. The large creeks do not contain much vegetation. The smaller creeks often contain plants similar to those of the cold springs.

The plants characteristic of cold running water are :

<i>Batrachium divaricatum,</i>	<i>Mimulus jamesii,</i>
<i>Batrachium trichophyllum,</i>	<i>Philotria canadensis,</i>
<i>Berula erecta,</i>	<i>Roripa nasturtium,</i>
<i>Cardamine bulbosa,</i>	<i>Veronica americana.</i>

Epilobiums—*coloratum* and *adenocaulon*—are often found growing in cold spring water but are not peculiar to this locality as they are also found growing in moist soil. None of the spring plants can be called common to large areas, for the conditions necessary for their growth are limited in extent.

POND VEGETATION.

There are but very few natural ponds along the creeks. The ponds are generally artificial and as such present a variety of conditions and a corresponding variety of plants. A small natural pond in a bog near Crooked creek contains all it can hold of the yellow pond-lily. (Plate XXVII., B.) This is the only place in which any of the water-lily family were found outside of the sloughs and lakes of the Mississippi river.

WET MEADOW VEGETATION OF THE CREEK VALLEYS.

The wet meadows naturally cover a very large part of the creek valleys but under present conditions most of them are

used for pasture, or where they can be easily drained for cultivation, though they are of course in constant danger of being flooded. Under these conditions there are but few wet meadows which have retained their original vegetation. Many of them under continual pasturing have grown up to coarse weeds and grasses. The greatest variety of plants is found where the wet meadow has been used as a hay meadow. This offers more nearly the natural conditions for such plants as *Lilium canadense* (Plate XXVII., A). *Habenaria leucophæa*, *Pedicularis lanceolata*, *Saxifraga pennsylvanica*, *Chelone glabra*, *Parnassia caroliniana*, *Onoclea sensibilis* and many others in the list.

The plants which grow in the wet meadows are :

<i>Angelica atropurpurea</i> ,	<i>Lythrum alatum</i> ,
<i>Aster novæ-angliæ</i> ,	<i>Macrocalyx nyctelea</i> ,
<i>Aster prenanthoides</i> ,	<i>Mimulus ringens</i> ,
<i>Aster puniceus</i> ,	<i>Onoclea sensibilis</i> ,
<i>Aster sagittifolius</i> ,	<i>Parnassia caroliniana</i> ,
<i>Caltha palustris</i> ,	<i>Pedicularis lanceolata</i> ,
<i>Cerastium longipedunculatum</i> ,	<i>Pimpinella integerrima</i> ,
<i>Chelone glabra</i> ,	<i>Rudbeckia laciniata</i> ,
<i>Cicuta bulbifera</i> ,	<i>Rudbeckia triloba</i> ,
<i>Cicuta maculata</i> ,	<i>Rumex acetosella</i> ,
<i>Doellingeria umbellata</i> ,	<i>Rumex crispus</i> ,
<i>Dryopteris thelypteris</i> ,	<i>Saxifraga pennsylvanica</i> ,
<i>Gentiana crinita</i> ,	<i>Silene alba</i> ,
<i>Gentiana flavida</i> ,	<i>Silphium laciniatum</i> ,
<i>Habenaria leucophæa</i> ,	<i>Silphium perfoliatum</i> ,
<i>Habenaria psycodes</i> ,	<i>Viola obliqua</i> ,
<i>Lilium canadense</i> ,	<i>Zizia aurea</i> .
<i>Lobelia syphilitica</i> ,	

MOIST WOODS VEGETATION.

As previously stated the most typical moist woods vegetation is to be found on the north banks of the table lands. The timber on the banks has much of it been left uncut and offers the very best conditions for the survival of moist woods vegetation. In the list of moist woods plants here given are included only those collected or noted from a single location in Winnebago valley. It is a bank about one-half a mile long bordering on the table land for the greater part of its length. Some of the

plants listed do not seem to be typical moist woods plants and in such cases they have probably been driven to the margin of the thicket by the cultivation of the table land on one side and by the high water of the creek bottom on the other. The plants of the moist woods on this bank are :

<i>Acer negundo,</i>	<i>Cornus stolonifera,</i>
<i>Acer nigrum,</i>	<i>Corylus americana,</i>
<i>Actæa alba,</i>	<i>Cratægus punctata,</i>
<i>Actæa rubra,</i>	<i>Cratægus tomentosa,</i>
<i>Adiantum pedatum,</i>	<i>Cypripedium hirsutum,</i>
<i>Adopogon virginicum,</i>	<i>Cystopteris bulbifera,</i>
<i>Adoxa moschatellina,</i>	<i>Deringa canadensis,</i>
<i>Agastache scrophulariæfolia,</i>	<i>Diervilla diervilla,</i>
<i>Agrimonia hirsuta,</i>	<i>Epilobium adenocaulon,</i>
<i>Amelanchier canadensis,</i>	<i>Epilobium coloratum,</i>
<i>Anemone quinquefolia,</i>	<i>Equisetum arvense,</i>
<i>Apios apios,</i>	<i>Erigeron pulchellus,</i>
<i>Apocynum androsæmifolium,</i>	<i>Erythronium albidum,</i>
<i>Aralia nudicaulis,</i>	<i>Euonymus atropurpureus,</i>
<i>Aralia racemosa,</i>	<i>Eupatorium ageratoides,</i>
<i>Arisæma triphyllum,</i>	<i>Falcata comosa,</i>
<i>Asarum canadense,</i>	<i>Fragaria americana,</i>
<i>Asclepias exaltata,</i>	<i>Galium aparine,</i>
<i>Asclepias incarnata,</i>	<i>Galium boreale,</i>
<i>Asclepias syriaca,</i>	<i>Galium trifidum,</i>
<i>Asplenium acrostichoides,</i>	<i>Galium triflorum,</i>
<i>Asplenium filix-fœmina,</i>	<i>Geranium maculatum,</i>
<i>Bicuculla cucullaria,</i>	<i>Geum strictum,</i>
<i>Bidens frondosa,</i>	<i>Habenaria bracteata,</i>
<i>Bidens comosa,</i>	<i>Hepatica acuta,</i>
<i>Botrychium virginianum,</i>	<i>Heracleum lanatum,</i>
<i>Campanula americana,</i>	<i>Humulus lupulus,</i>
<i>Carex rosea,</i>	<i>Hydrophyllum virginicum,</i>
<i>Carpinus caroliniana,</i>	<i>Impatiens aurea,</i>
<i>Caulophyllum thalictroides,</i>	<i>Impatiens biflora,</i>
<i>Cerastium longipedunculatum,</i>	<i>Juglans cinerea,</i>
<i>Circæa lutetiana,</i>	<i>Juglans nigra,</i>
<i>Clematis virginiana,</i>	<i>Lactuca floridana,</i>
<i>Cornus candidissima,</i>	<i>Lathyrus ochroleucus,</i>
<i>Cornus rotundifolia,</i>	<i>Lathyrus venosus,</i>

Leptorchis liliifolia,
Lobelia syphilitica,
Lonicera dioica,
Lonicera sullivantii,
Malus ioensis,
Menispermum canadensis,
Mentha canadensis,
Micranthella lobata,
Mitella diphylla,
Nabalus albus,
Nepeta cataria,
Onoclea struthiopteris,
Osmunda claytoniana,
Ostrya virginiana,
Oxalis stricta,
Parthenocissus quinquefolia,
Pedicularis canadensis,
Peramium pubescens,
Phlox divaricata,
Phryma leptostachya,
Podophyllum peltatum,
Polemonium reptans,
Polygonatum commutatum,
Polygonum incarnatum,
Polygonum hydropiperoides,
Populus grandidentata,
Populus tremuloides,
Potentilla canadensis,
Prunus americana,
Prunus nigra,
Prunus serotina,
Prunella vulgaris,
Prunus virginiana,
Pteris aquilina,
Pyrola elliptica,
Quercus coccinea,
Quercus macrocarpa,
Quercus rubra,
Quercus velutina,

Ranunculus abortivus,
Ranunculus septentrionalis,
Rhus glabra,
Ribes cynosbati,
Ribes floridum,
Ribes uva-crispa,
Rubus occidentalis,
Rubus villosus,
Rudbeckia laciniata,
Rudbeckia triloba,
Salix amygdaloides,
Salix fluviatilis,
Sambucus canadensis,
Sanicula gregaria,
Sanicula marylandica,
Silene alba,
Smilax herbacea,
Solidago canadensis,
Staphylea trifolia,
Syndesmon thalictroides,
Thalictrum dioicum,
Thalictrum purpurescens,
Tilia americana,
Trillium cernuum,
Trillium erectum,
Triosteum perfoliatum,
Ulmus americana,
Ulmus fulva,
Urtica gracilis,
Urticastrum divaricatum,
Uvularia grandiflora,
Vagnera racemosa,
Viburnum lentago,
Viola pubescens,
Viola obliqua,
Vitis vulpina,
Washingtonia claytoni,
Xanthoxylum americana.

MESOPHYTIC FIELD VEGETATION.

The mesophytic field vegetation as it exists in the creek valleys to-day is almost entirely a result of cultivation. The table lands which bear the plants of the mesophytic field were formerly almost entirely wooded. To-day they are cleared of timber and used for cultivation. They furnish the best fields for cultivation in the whole district. They are not subject to the overflow of the bottom lands, nor to the drought of the ridges, nor to the washouts of the side-hills. Being so extensively cultivated the plants growing upon them, which are not themselves cultivated, are almost confined to the edges of fields and thickets. Under such conditions a list of plants of this area would have no bearing upon the natural ecological groups.

Bluffs.—The bluffs bordering the river differ from those bordering creek valleys in being steeper and in having many more precipitous cliffs. The brow of the bluff along the river for almost the entire distance bordering the territory covered except where interrupted by branch valleys or ravines is one almost perpendicular limestone cliff, varying from a few feet to a hundred feet in height. Cliffs of this sort are not so common back from the river. The vegetation of the river bluffs differs to some extent from the creek bluffs in its character. Some of the common forest trees of the lowland of the creek valleys, instead of growing on the lowland of the river valley inhabit the foot of the river bluff. The proximity of the river bluff to larger areas of water seems to raise the moisture content of the soil of the river bluff above that of the creek bluff at the same height above water level. The growth then of such a tree as the black walnut at the foot of the river bluff does not show that it grows here under more arid conditions than in the creek valley, but that the same conditions of moisture in the soil are found at a higher level on the river bluff than on the creek bluff.

On all bluffs the vegetation shows the greatest variation with the direction of the slope. Those facing from south to west and receiving the direct rays of the sun from noon to 4 P. M. are generally bare of trees (Plate XXII., B) and shrubs while those facing from north to east are generally thickly wooded (Plate XXVI., B). Ravines with their greater amount of moisture in the soil and greater protection from winds are

generally wooded to some extent whatever the direction of the slope (Plate XXII., A and B).

Near the heads of the creeks at the bases of the northern slopes are many moist limestone cliffs with their characteristic abundance of liverworts, mosses and ferns, sometimes almost to the exclusion of the higher seed plants. The moist cliffs bear more of the northern types of plants rare to this region than any one other special area.

The zones of forest vegetation on the bluffs are often very distinctly marked out by a few species. The oaks, *Q. rubra*, *Q. macrocarpa* and *Q. coccinea* extend from the valley to the ridge of the bluff in varying degrees of abundance and thus do not determine the zone. With these, however, are a few species which are limited either to the base or ridge. The aspen and a large-tooth poplar as primary and the ironwood, juneberry and wild crab as secondary species mark out the basal zone of forest and the white oak, white birch and shagbark hickory in varying proportions mark out the ridge forest. Between the zone containing white birch on the ridge and that containing the aspen at the base is a zone which is almost entirely covered with dark-barked trees. Thus the zones are clearly shown by the white bark of the white birch on the ridge and that of the aspen below with the dark-barked trees between.

The vegetation areas of the bluffs may be considered as moist cliffs, wooded slopes and ravines, ridge forests, bare slopes and open ridges, and dry rocks. The plants of the moist cliffs are hydrophytic; those of the wooded slopes and ravines which include a large part of the bluff area are mesophytic; the ridge forests are xerophytic and the bare slope, open ridge and dry rock plants which grow on the most exposed and dry areas in this region are distinctly xerophytic.

MOIST CLIFF VEGETATION.

This group of plants is one of the most interesting of this region. One is always on the lookout for rare plants to this part of the state from the secluded and often almost inaccessible moist cliff. The short list of plants given here might be said to be almost peculiar to moist cliffs as they are rarely found elsewhere. Others might be named that grow upon moist cliffs, but which are more characteristic of moist woods.

Some of the plants characteristic of moist cliffs are:

<i>Acer spicatum</i> ,	<i>Dirca palustris</i> ,
<i>Adoxa moschatellina</i> ,	<i>Pellaea stelleri</i> ,
<i>Betula lutea</i> ,	<i>Viburnum opulus</i> .
<i>Circæa alpina</i> ,	

VEGETATION OF WOODED SLOPES AND RAVINES.

This group of plants borders and perhaps encroaches upon the moist woods of the valley upon the one hand and the ridge forest upon the other. It covers a large area but does not represent the variety of species that are found in the moist woods of the valley.

Some of the plants of the wooded slopes and ravines are

<i>Asplenium acrostichoides</i> ,	<i>Lilium umbellatum</i> ,
<i>Asplenium filix-femina</i> ,	<i>Lobelia cordifolia</i> ,
<i>Castilleja coccinea</i> ,	<i>Lobelia inflata</i> ,
<i>Cypripedium hirsutum</i> ,	<i>Onoclea struthiopteris</i> ,
<i>Cypripedium spectabilis</i> ,	<i>Osmunda claytoniana</i> ,
<i>Cystopteris fragilis</i> ,	<i>Panax quinquefolia</i> ,
<i>Epilobium coloratum</i> ,	<i>Pedicularis canadensis</i> ,
<i>Erechtites hieracifolia</i> ,	<i>Polygonatum commutatum</i> ,
<i>Eupatorium ageratoides</i> ,	<i>Pteris aquilina</i> ,
<i>Falcata comosa</i> ,	<i>Rubus occidentalis</i> ,
<i>Hieracium umbellatum</i> ,	<i>Rubus villosus</i> ,
<i>Hieracium scabrum</i> ,	<i>Silene stellata</i> ,
<i>Hypericum maculata</i> ,	<i>Smilax herbacea</i> ,
<i>Hypericum majus</i> ,	<i>Smilax hispida</i> .

RIDGE FOREST VEGETATION.

Most of the woods upon the ridges are rather open and therefore present somewhat xerophytic conditions. The principal forest trees of the ridges are those which have been previously mentioned, *i. e.*, *Betula papyrifera*, *Hicoria ovata*, *Quercus alba* and *Quercus macrocarpa*. Scattered trees of other kinds are found on special areas. On the point of a bluff near the village of Freeburg, several trees of *Gymnocladus dioicus* were found in one of the most exposed locations that it could obtain. This is a very unusual location for this tree. *Prunus virginiana*, *Juniperus virginiana*, *Tilia americana* and *Celtis occidentalis* quite frequently grow near or on the rocky summits of the bluffs but do not cover large areas.

BARE SLOPE AND OPEN RIDGE VEGETATION.

The soil of the southern slope and open ridge is generally largely formed of sand and broken limestone. It becomes very dry early in the summer, and then appears almost bare of vegetation except where it is broken by scattered junipers (Plate XXI., A) or patches of *Rhus glabra*.

Some of the plants characteristic of the bare slope and open ridge are :

<i>Acerates viridiflora</i> ,	<i>Kuhnistera purpurea</i> ,
<i>Asclepias verticillata</i> ,	<i>Lacinaria cylindracea</i> ,
<i>Aster sericeus</i> ,	<i>Lacinaria scariosa</i> ,
<i>Bouteloua curtipendula</i> ,	<i>Lappula lappula</i> ,
<i>Bouteloua hirsuta</i> ,	<i>Linum sulcatum</i> ,
<i>Coreopsis palmata</i> ,	<i>Lobelia spicata</i> ,
<i>Cyperus filiculmis</i> ,	<i>Oxalis violacea</i> ,
<i>Cyperus houghtoni</i> ,	<i>Polygala verticillata</i> ,
<i>Cyperus schweinitzii</i> ,	<i>Polygonum tenue</i> ,
<i>Draba caroliniana</i> ,	<i>Pulsatilla hirsutissima</i> ,
<i>Elymus canadensis</i> ,	<i>Ratibida columnaris</i> ,
<i>Helianthus occidentalis</i> ,	<i>Rhus glabra</i> ,
<i>Euphorbia heterophylla</i> ,	<i>Rhus radicans</i> ,
<i>Hieracium canadense</i> ,	<i>Silene antirrhina</i> ,
<i>Juniperus communis</i> ,	<i>Valeriana edulis</i> ,
<i>Juniperus sabina</i> ,	<i>Viola pedata</i> ,
<i>Kæleria cristata</i> ,	<i>Viola pedatifida</i> .
<i>Kuhnistera candida</i> ,	

DRY ROCK VEGETATION (Plate XXI., B).

The rock plants and sand plants do not in many places form distinct groups. The sand of the bluffs nearly always contains considerable broken limestone and thus furnishes conditions favorable to the growth of limestone plants. *Pellæ atropurpurea* and *Camptosorus rhizophyllus* seem to be the only ones that are restricted to the bare limestone. The former prefers dryer and more exposed locations than the latter.

The characteristic plants of dry rocks are :

<i>Betula papyrifera</i> ,	<i>Juniperus communis</i> ,
<i>Campanula rotundifolia</i> ,	<i>Pellæ atropurpurea</i> ,
<i>Camptosorus rhizophyllus</i> ,	<i>Valeriana edulis</i> ,
<i>Cystopteris bulbifera</i> ,	<i>Zygadenus elegans</i> .

Results of the survey.—The botanical survey of this part of the state was undertaken with a great deal of interest by the collectors. Never before has this region been explored for the purpose of botanical collection. Great opportunities were therefore offered in the search for species, which may have made this corner of the state the northern limit of their range and for those which may have strayed down the Mississippi river from their native home at its headwaters. With such possibilities in view the collectors were not disappointed with the results.

As a result of the survey 578 species of plants were collected, 26 of which are Pteridophyta, 5 Archispermæ, 87 Monocotyledons and 460 Dicotyledons.

In the catalogue of species are reported the following plants which either have not been previously reported from Minnesota or have been reported without any known authentic collection. The specimens have been placed in the Herbarium of the University.

<i>Allionia linearis</i> ,†	<i>Hieracium umbellatum</i> ,†
<i>Asplenium angustifolium</i> ,	<i>Meibomia illinoensis</i> ,
<i>Bidens comosa</i> ,*	<i>Naias guadalupensis</i> ,
<i>Carex torta</i> ,	<i>Prunus nigra</i> ,
<i>Cratægus macracantha</i> ,	<i>Quercus prinoides</i> ,
<i>Falcata pitcheri</i> ,*	<i>Rudbeckia triloba</i> ,
<i>Gleditsia triacanthos</i> ,	<i>Sanicula trifoliata</i> ,
<i>Helianthus atrorubens</i> ,	<i>Senecio plattensis</i> .*

The following plants collected are of great interest as rare plants in the state or in this part of the state.

<i>Arctostaphylos uva-ursi</i> ,	<i>Gaura biennis</i> ,
<i>Asclepias obtusifolia</i> ,	<i>Hamamelis virginiana</i> ,
<i>Azolla caroliniana</i> ,	<i>Hydrocotyle americana</i> ,
<i>Betula lenta</i> ,	<i>Juniperus sabina</i> ,
<i>Carex lurida</i> ,	<i>Lactuca ludoviciana</i> ,
<i>Cheilanthes gracilis</i> ,	<i>Lactuca sagittifolia</i> ,
<i>Cratægus punctata</i> ,	<i>Meibomia dillenii</i> ,
<i>Cyperus houghtoni</i> ,	<i>Polygonum tenue</i> ,
<i>Dasystoma grandiflora</i> ,	<i>Polygonum virginianum</i> ,
<i>Dryopteris goldieana</i> ,	<i>Quercus platanoides</i> ,

* Previously collected but not reported from Minnesota.

† Previously reported from incorrect determinations or from general distribution ranges given in large manuals without authentic collection.

Sanicula gregaria,
Sagittaria cuneata,
Solidago erecta,

Thalesia uniflora,
Woodsia oregana.

CATALOG OF SPECIES COLLECTED.

The following catalog of plants contains only those collected by Mr. H. L. Lyon and the writer in the southeastern part of Houston county. With the exception of about ten species which were collected in Brownsville, they were all gathered in the townships of Mayville, Crooked Creek, Winnebago and Jefferson.

The determinations were almost entirely made by the collectors, each determining the plants of his own collection. The determinations of the species of *Physalis* were kindly made by Mr. P. A. Rydberg, of Columbia University, and those of *Quercus prinoides*, *velutina*, *coccinea* and *rubra*, and *Betula lenta* by Professor C. S. Sargent.

The nomenclature is that of Britton and Brown's Illustrated Flora of the Northern United States and Canada.

PTERIDOPHYTA.

OPHIOGLOSSACEÆ.

Botrychium virginianum (L.) Sw. Schrad. Journ. Bot. 2:
III. 1800.

Coll.: Lyon 38, Winnebago; 207, Mayville. June, July.
Infrequent, rich woods and shady banks.

OSMUNDACEÆ.

Osmunda claytoniana L. Sp. Pl. 1066. 1753.

Coll.: Lyon 43, Winnebago. June.
Common, shady hillsides and ravines.

POLYPODIACEÆ.

Onoclea sensibilis L. Sp. Pl. 1062. 1753.

Coll.: Lyon 326, Jefferson. Aug.
Common, wet meadows and river bottoms.

Onoclea struthiopteris (L.) Hoffm. Deutsch. Fl. 2: II. 1795.

Coll.: Lyon 79, Winnebago; 208, Mayville. June, July.
Common, moist thickets and river bottoms.

Woodsia oregana D. C. EATON, Can. Nat. 2: 90. 1865.

Coll.: Lyon 306, Jefferson. Aug.

Rare and local, on brow of river bluff. The only previous collection reported from Minnesota is that from Stillwater by Miss Field. There are no previously collected specimens from Minnesota in the Herbarium of the University.

Cystopteris bulbifera (L.) BERNH. Schrad. Neues Journ. Bot.

1: Part 2, 26. 1806.

Coll.: Lyon 57, Winnebago. June.

Common on shaded rocks and limestone ledges.

Cystopteris fragilis (L.) BERNH. Schrad. Neues Journ. Bot.

1: Part 2, 27. 1806.

Coll.: Lyon 221, Mayville. July.

Frequent in deep woods.

Dryopteris thelypteris (L.) A. GRAY, Man. 630. 1848.

Coll.: Lyon 461, Brownsville. Aug.

Common in swamps and wet meadows along Wild Cat creek.

Dryopteris goldieana (HOOK.) A. GRAY, Man. 631. 1848.

Coll.: Lyon 203, 222, Mayville. July.

Rare and local, deep rich woods. The only previous authentic collection in Minnesota is that of Leiberg at Minneopa falls, Blue Earth County.

Dryopteris spinulosa (RETZ.) KUNTZE, Rev. Gen. Pl. 813. 1891.

Coll.: Lyon 253½, Mayville. July.

Rare and local, deep rich woods.

Camptosorus rhizophyllus (L.) LINK, Hort. Berol. 2: 69. 1833.

Coll.: Lyon 32, 65, Winnebago. June.

Infrequent or rare, limestone ledges and boulders.

Asplenium angustifolium MICHX. Fl. Bor. Am. 2: 265. 1803.

Coll.: Lyon 204, 224, Mayville. July.

Rare, deep rich woods. Not previously reported from Minnesota.

Asplenium acrostichoides Sw. Schrad. Journ. Bot. 2: 54. 1800.

Coll.: Lyon 206, 223, Mayville; 318, Jefferson. July Aug.

Frequent, rich woods and moist thickets.

Asplenium filix-fœmina (L.) BERNH. Schrad. Neues Journ.

Bot. 1: Part 2, 26. 1806.

Coll.: Lyon 205, 220, Mayville. July.

Common woods and thickets.

Adiantum pedatum L. Sp. Pl. 1095. 1753.

Coll.: Lyon 45, Winnebago. June.

Common, woods and shady banks.

Pteris aquilina L. Sp. Pl. 1075. 1753.

Coll.: Lyon 42, Winnebago. June.

Common, hillsides and cut-over timber lands.

Pellæa stelleri (S. G. GMEL.) WATT, Can. Fil. No. 2.

1869-70.

Coll.: Lyon 77, Winnebago. June.

Infrequent, moist limestone ledges.

Pellæa atropurpurea (L.) LINK, Fil. Hort. Berol. 59. 1841.

Coll.: Lyon 30, Winnebago. June.

Frequent, dry limestone cliffs and boulders.

Cheilanthes gracilis (FÉE) METT. Abh. Senck. Nat. Gesell.

3: (reprint 36). 1859.

Coll.: Lyon 299, 305, Jefferson. Aug.

Rare and local, dry limestone cliff. There is no previous authentic collection of this from Minnesota in the University Herbarium. Sandberg's collection from Vermillion lake made in 1885 and reported as this species should be *Cheilanthes lanosa* (Michx.) Watt. which has not previously been reported from Minnesota.

Polypodium vulgare L. Sp. Pl. 1085. 1753.

Coll.: Lyon 76, Winnebago. June.

Local on limestone ledge.

SALVINIACEÆ.

Azolla caroliniana WILLD. Sp. Pl. 5: 541. 1810.

Coll.: Lyon 276, Allamakee Co., Iowa; 298, 444, Jefferson. Aug.

Abundant on sloughs and lakes of the Mississippi.

EQUISETACEÆ.

Equisetum arvense L. Sp. Pl. 1061. 1753.

Coll.: Lyon 102, Winnebago. June.

Frequent, meadows and pastures.

Equisetum pratense EHRH. Hanov. Mag. 138. 1784.

Coll.: Lyon 29, Winnebago. June.

Frequent in light shaded soil.

Equisetum hyemale L. Sp. Pl. 1062. 1753.

Coll.: Lyon 415, Winnebago. Aug.

Common.

Equisetum lævigatum A. BR.; Engelm. Amer. Journ. Sci.

46: 87. 1844.

Coll.: Lyon 18, Winnebago. June.

Local, moist meadows.

SELAGINELLACEÆ.

Selaginella rupestris (L.) SPRING. in Mart. Fl. Bras. 1: Part 2, 118. 1840.

Coll.: Lyon 78, Winnebago. June.

Infrequent, dry rocks.

SPERMATOPHYTA.

ARCHISPERMÆ.

PINACEÆ.

Pinus strobus L. Sp. Pl. 1001. 1753.

Coll.: Wheeler 166, 254, Winnebago. June.

Local on bluffs along Winnebago and Crooked Creeks.

Juniperus communis L. Sp. Pl. 1040. 1753.

Coll.: Wheeler 108, Winnebago; 213, Jefferson; 349, Crooked Creek. June, July.

Common on dry bluffs. (Plates XXI., A and B, XXIV., B.)

Juniperus virginiana L. Sp. Pl. 1039. 1753.

Coll.: Wheeler 158, 169, Winnebago. June.

Frequent on dry bluffs.

Juniperus sabina L. Sp. Pl. 1039. 1753.

Coll.: Wheeler 214, Jefferson. June.

Rare and local on dry bluffs. No previous collection reported from this part of the state. This is about the most southern point of collection for this species in the United States according to Britton and Brown.

TAXACEÆ.

Taxus minor (MICHX.) BRITTON, Mem. Torr. Club, 5: 19.
1893.

Coll.: Wheeler 289, Crooked Creek; 317, Mayville; 433,
Jefferson. July.

Infrequent, generally on dry limestone ridges, occasionally
in woods. Not previously reported from the southern part
of the state.

METASPERMÆ.

TYPHACEÆ.

Typha latifolia L. Sp. Pl. 971. 1753.

Coll.: Wheeler 266, Winnebago. June.

SPARGANIACEÆ.

Sparganium eurycarpum ENGELM. in A. Gray, Man. Ed. 2,
430. 1856.

Coll.: Wheeler 423, Jefferson. July.

NAIADACEÆ.

Potamogeton natans L. Sp. Pl. 126. 1753.

Coll.: Wheeler 460, Jefferson. Aug.

Potamogeton lonchites TUCKERM. Am. Journ. Sci (II.) 6: 226.
1848.

Coll.: Wheeler 395, 488, Jefferson. Aug.

Potamogeton zosteræfolius SCHUM. Enum. Pl. Saell. 50. 1801.

Coll.: Wheeler 462, 490, 497, Jefferson. Aug.

Potamogeton pusillus L. Sp. Pl. 127. 1753.

Coll.: Wheeler 461, Jefferson. Aug.

Naias flexilis (WILLD.) ROST. & SCHMIDT, Fl. Sed. 384. 1824.

Coll.: Lyon 329, Jefferson. Aug.

Naias guadalupensis (SPRENG.) MORONG, Mem. Torr. Club, 3:
Part 2, 60. 1893.

Coll.: Lyon 443, Jefferson. Aug.

Not previously reported from Minnesota. Sloughs and lakes
of the Mississippi river.

ALISMACEÆ.

Alisma plantago-aquatica L. Sp. Pl. 342. 1753.

Coll.: Lyon 384, Jefferson. Aug.

Sagittaria latifolia WILLD. Sp. Pl. 4: 409. 1806.

Coll.: Wheeler 123, Winnebago; 304.

Crooked Creek; 492, Jefferson. June-Aug.

Sagittaria cuneata SHELDON, Bull. Torr. Club, 20: 283. *pl.*

159. 1893.

Coll.: Wheeler 491, 495, Jefferson. Aug.

Not previously reported from this part of the state or the Mississippi river. Frequent in sloughs.

Sagittaria rigida PURSH, Fl. Am. Sept. 397. 1814.

Coll.: Wheeler 486, Jefferson. Aug.

Sagittaria cristata ENGELM.; Arthur, Proc. Davenport Acad.

4: 29. 1882.

Coll.: Lyon 481, Jefferson. Aug.

VALLISNERIACEÆ.

Philotria canadensis (MICHX.) BRITTON, Science (II.) 2: 5.

1895.

Coll.: Lyon 174, Winnebago. July.

GRAMINEÆ.

Andropogon furcatus MUHL.; Willd. Sp. Pl. 4: 919. 1806.

Coll.: Wheeler 404, Jefferson. July.

Chrysopogon avenaceus (MICHX.) BENTH. Journ. Linn. Soc.

19: 73. 1881.

Coll.: Lyon 354, Jefferson. Aug.

Syntherisma sanguinalis (L.) NASH, Bull. Torr. Club, 22:

420. 1895.

Coll.: Wheeler 424, Jefferson. July.

Panicum crus-galli L. Sp. Pl. 56. 1753.

Coll.: Wheeler 420, Lyon 478, Jefferson. July, Aug.

Panicum portertianum NASH, Bull. Torr. Club 22: 420. 1895.

Coll.: Wheeler 388, Jefferson. July.

Panicum scribnerianum NASH, Bull. Torr. Club, 22: 421.

1895.

Coll.: Wheeler 182, Winnebago. June.

Panicum virgatum L. Sp. Pl. 59. 1753.

Coll.: Wheeler 421, Jefferson. July.

Panicum capillare L. Sp. Pl. 58. 1753.

Coll.: Lyon 477, Jefferson. Aug.

- Cenchrus tribuloides** L. Sp. Pl. 1050. 1753.
Coll.: Lyon 287, Jefferson. July.
- Zizania aquatica** L. Sp. Pl. 991. 1753.
Coll.: Wheeler 523, Jefferson. Aug.
- Homalocenchrus virginicus** (WILLD.) BRITTON, Trans. N. Y. Acad. Sci. 9: 14. 1889.
Coll.: Wheeler 564, Jefferson. Aug.
- Spartina cynosuroides** (L.) WILLD. Enum. 80. 1809.
Coll.: Wheeler 426, Jefferson. July.
- Bouteloua hirsuta** LAG. Var. Cienc. y Litter 2: Part 4, 141. 1805.
Coll.: Wheeler 347, Crooked Creek; Lyon 291, Jefferson. July.
- Bouteloua curtipendula** (MICHX.) TORR. Emory's Rep. 153. 1848.
Coll.: Wheeler 362, Crooked Creek. July.
- Eragrostis hypnoides** (LAM.) B.S.P. Prel. Cat. N. Y. 69. 1888.
Coll.: Wheeler 524, Jefferson. Aug.
- Koeleria cristata** (L.) PERS. Syn. 1: 97. 1805.
Coll.: Lyon 113, Winnebago. June.
- Panicularia americana** (TORR.) MACM. Met. Minn. 81. 1892.
Coll.: Lyon 59, Winnebago. June.
- Bromus ciliatus** L. Sp. Pl. 76. 1753.
Coll.: Lyon 414, Winnebago. Aug.
- Bromus kalmii** A. GRAY, Man. 600. 1848.
Coll.: Lyon 259, Jefferson. July.
- Bromus secalinus** L. Sp. Pl. 76. 1753.
Coll.: Lyon 184, Winnebago. July.
- Elymus virginicus** L. Sp. Pl. 84. 1753.
Coll.: Wheeler 418, Jefferson. July.
- Elymus canadensis** L. Sp. Pl. 83. 1753.
Coll.: Wheeler 292, Mayville. July.

CYPERACEÆ.

- Cyperus schweinitzii** TORR. Ann. Lyc. N. Y. 3: 276. 1836.
Coll.: Lyon 375, Jefferson. Aug.
- Cyperus esculentus** L. Sp. Pl. 45. 1753.
Coll.: Wheeler 526, Jefferson. Aug.

Cyperus filiculmis VAHL, Enum. 2: 328. 1806.

Coll.: Wheeler 348, Crooked Creek. July.

Cyperus houghtoni TORR. Ann. Lyc. N. Y. 3: 277. 1836.

Coll.: Wheeler 346, Crooked Creek. July.

The only previous collection known from Minnesota is that of Holzinger, St. Croix River, Minn. Britton reports this collection in the Bull. Torr. Club, 18: 368. 1891.

The collection from Crooked Creek was made from the summit of a very dry sandy hill. Both *C. houghtoni* and *C. schweinitzii* grow in sand but the former probably grows in the drier locality of the two.

Eleocharis acicularis (L.) R. & S. Syst. 2: 154. 1817.

Coll.: Wheeler 527, Jefferson. Aug.

Scirpus lacustris L. Sp. Pl. 48. 1753.

Coll.: Wheeler 148, Winnebago. June.

Scirpus atrovirens MUHL. Gram. 43. 1817.

Coll.: Wheeler 267, Winnebago. June.

Scirpus cyperinus (L.) KUNTH, Enum. 2: 170. 1837.

Coll.: Lyon 168, Crooked Creek; Wheeler 425, Jefferson. June, July.

Carex lupulina MUHL.; Schk. Riedg. 2: 54. f. 123. 1806.

Coll.: Lyon 280, Jefferson. July.

Carex lurida WAHL. Kongl. Acad. Handl. (II.) 24: 153. 1803.

Coll.: Wheeler 142, Winnebago. June.

No Minnesota specimens in the Herbarium of the University.

Previously collected at Lake Itasca, Sandberg No. 1180.

Carex hystericina MUHL.; Willd. Sp. Pl. 4: 282. 1805.

Coll.: Wheeler 119, Winnebago. June.

Carex filiformis L. Sp. Pl. 976. 1753.

Coll.: Wheeler 121, Winnebago. June.

Carex torta BOOTT; Tuckerm. Enum. Meth. 11. 1843.

Coll.: Lyon 60, Winnebago. June.

Not previously reported from Minnesota. The nearest point of previous collection, as shown by the Herbarium of the University, is Winnebago county, Wisconsin.

Carex stipata MUHL.; Willd. Sp. Pl. 4: 233. 1805.

Coll.: Wheeler 116, Winnebago. June.

- Carex vulpinoidea* MICHX. Fl. Bor. Am. 2: 169. 1803.
Coll.: Wheeler 144, Winnebago. June.
- Carex rosea* Schk. Riedgr. Nachtr. 15. f. 179. 1806.
Coll.: Wheeler 11, 143, Winnebago. June.
- Carex tribuloides* WAHL. Kongl. Vet. Acad. Handl. (II.) 24:
145. 1803.
Coll.: Wheeler 118, Winnebago. June.
- Carex cristatella* BRITTON, Br. & Br. Ill. Fl. N. U. S. & Can.
1: 357. f. 865. 1896.
Coll.: Wheeler 197, Winnebago. June.

ARACEÆ.

- Arisæma triphyllum* (L.) TORR. Fl. N. Y. 2: 239. 1843.
Coll.: Lyon 31, Winnebago. June.
- Arisæma dracontium* (L.) SCHOTT, Melet. 1: 17. 1832.
Coll.: Lyon 239, Mayville; 248. Crooked Creek. July.
The only previous collections reported from Minnesota are
Manning, Lake Pepin and Holzinger, Winona. Frequent
in moist woods along the Mississippi River.

LEMNACEÆ.

- Spirodela polyrhiza* (L.) SCHLEID. Linnæa, 13: 392. 1839.
Coll.: Wheeler 113, Winnebago. June.
- Lemna minor* L. Sp. Pl. 970. 1753.
Coll.: Wheeler 112, Winnebago. June.

COMMELINACEÆ.

- Tradescantia virginiana* L. Sp. Pl. 288. 1753.
Coll.: Lyon 45, Winnebago. June.
- Tradescantia reflexa* Raf. Atl. Journ. 150. 1832.
Coll.: Wheeler 410, Jefferson. July.
Not previously reported from Minnesota.

JUNCACEÆ.

- Juncus effusus* L. Sp. Pl. 326. 1753.
Coll.: Lyon 58, Winnebago. June.
- Juncus tenuis* WILLD. Sp. Pl. 2: 214. 1799.
Coll.: Lyon 73, Winnebago. June.

MELANTHACEÆ.

- Zygadenus elegans* PURSH, Fl. Am. Sept. 241. 1814.
Coll.: Lyon 49, Winnebago. June.

- Uvularia grandiflora** J. E. SMITH, Ex. Bot. 1: 99. *pl.* 51.
1804-5.
Coll.: Lyon 91, Winnebago. June.

LILIACEÆ.

- Lilium umbellatum** PURSH, Fl. Am. Sept. 229. 1814.
Coll.: Lyon 146, Winnebago. June.
All previous collections of this species from Minnesota have been reported as *L. philadelphicum* L. The latter species so far as known has not been collected in Minnesota.
- Lilium canadense** L. Sp. Pl. 303. 1753.
Coll.: Lyon 199, Crooked Creek. July.
Common, moist meadows. (Plate XXVII., A.)
- Erythronium albidum** NUTT. Gen. 1: 223. 1818.
Coll.: Herb. Wheeler 1, Winnebago. May.

CONVALLARIACEÆ.

- Vagnera racemosa** (L.) MORONG, Mem. Torr. Club, 5: 114.
1894.
Coll.: Wheeler 67, Winnebago. June.
- Vagnera stellata** (L.) MORONG, Mem. Torr. Club, 5: 114.
1894.
Coll.: Wheeler 97, Winnebago. June.
- Unifolium canadense** (DESF.) GREENE, Bull. Torr. Club, 15: 287. 1888.
Coll.: Wheeler 98, Winnebago. June.
- Polygonatum commutatum** (R. & S.) DIETR.; Otto & Dietr. Gartenz. 3: 222. 1835.
Coll.: Wheeler 78, 184, Winnebago; 570, Jefferson; Lyon 166, Crooked Creek. June, Aug.
- Trillium erectum** L. Sp. Pl. 340. 1753.
Coll.: Lyon 17, Winnebago. June.
- Trillium cernuum** L. Sp. Pl. 339. 1753.
Coll.: Herb. Wheeler 2, Winnebago. May.

SMILACEÆ.

- Smilax herbacea** L. Sp. Pl. 1030. 1753.
Coll.: Wheeler 376, Mayville; 467, Jefferson. July, Aug.

- Smilax hispida** MUHL.; Torr. Fl. N. Y. 2: 302. 1843.
Coll.: Wheeler 372, Crooked Creek; Lyon 258, Jefferson.
July.

AMARYLLIDACEÆ.

- Hypoxis hirsuta** (L.) COVILLE, Mem. Torr. Club, 5: 118.
1894.
Coll.: Wheeler 91, Winnebago. June.

DIOSCOREACEÆ.

- Dioscorea villosa** L. Sp. Pl. 1033. 1753.
Coll.: Wheeler 322, Mayville; 364, Crooked Creek.
July.

IRIDACEÆ.

- Iris versicolor** L. Sp. Pl. 39. 1753.
Coll.: Lyon 362, Jefferson. Aug.
Sisyrinchium angustifolium MILL. Gard. Dict. Ed. 7. 1759.
Coll.: Lyon 75, Winnebago. June.

ORCHIDACEÆ.

- Cypripedium reginæ** WALT. Fl. Car. 222. 1788.
Coll.: Wheeler 192, Winnebago. June.
Cypripedium candidum WILLD. Sp. Pl. 4: 142. 1805.
Coll.: Wheeler 99, Winnebago. June.
Cypripedium hirsutum MILL. Gard. Dict. Ed. 8, No. 3.
1768.
Coll.: Wheeler 66, 82, Winnebago. June.
Orchis spectabilis L. Sp. Pl. 943. 1753.
Coll.: Herb. Wheeler 8, Winnebago. June.
Habenaria bracteata (WILLD.) R. Br. in Ait. Hort. Kew, Ed.
2, 5: 192. 1813.
Coll.: Wheeler 106, Winnebago. June.
Habenaria leucophæa (NUTT.) A. GRAY, Man. Ed. 5, 502.
1867.
Coll.: Wheeler 299, Crooked Creek. July.
Habenaria psycodes (L.) A. GRAY, Am. Journ. Sci. 38: 310.
1840.
Coll.: Wheeler 386, Jefferson. July.
Peramium pubescens (WILLD.) MACM. Met. Minn. 172. 1892.
Coll.: Lyon 100, Winnebago. June.

- Leptorchis liliifolia** (L.) KUNTZE, Rev. Gen. Pl. 671. 1891.
Coll.: Wheeler 107, 168, 195, Winnebago; 350, Crooked
Creek; 391, Jefferson. June, July.

JUGLANDACEÆ.

- Juglans nigra** L. Sp. Pl. 997. 1753.
Coll.: Lyon 243, Crooked Creek. July.
- Juglans cinerea** L. Sp. Pl. Ed. 2, 1415. 1763.
Coll.: Lyon 62, 108, Winnebago. June.
- Hicoria minima** (MARSH.) BRITTON, Bull. Torr. Club, 15: 284.
1888.
Coll.: Lyon 149, Winnebago; 238, 239, Mayville; 475,
Jefferson. June, Aug.
- Hicoria ovata** (MILL) BRITTON, Bull. Torr. Club, 15: 283.
1888.
Coll.: Lyon 71, Winnebago; 474, Jefferson. June, Aug.

SALICACEÆ.

- Populus alba** L. Sp. Pl. 1034. 1753.
Coll.: Lyon 159, Winnebago. June.
- Populus balsamifera candicans** (AIT.) A. GRAY, Man. Ed. 2,
419. 1856.
Coll.: Lyon 156, Winnebago. June.
- Populus grandidentata** MICHX. Fl. Bor. Am. 2: 243. 1803.
Coll.: Lyon 64, Winnebago. June.
- Populus tremuloides** MICHX. Fl. Bor. Am. 2: 243. 1803.
Coll.: Lyon 88, Winnebago. June.
- Populus deltoides** MARSH, Arb. Am. 106. 1785.
Coll.: Lyon 125, Winnebago. June.
- Salix nigra** MARSH, Arb. Am. 139. 1785.
Coll.: Wheeler 265, Winnebago. June.
- Salix amygdaloides** ANDERS. Ofv. Handl. Vet. Akad. 1858:
114. 1858.
Coll.: Wheeler 137, Winnebago. June.
- Salix lucida** MUHL. Neue Schrift. Ges. Nat. Fr. Berlin, 4: 239.
pl. 6. f. 7. 1803.
Coll.: Wheeler 138½, Winnebago; 232, Crooked Creek.
June, July.

- Salix fluviatilis** NUTT. Sylva, 1: 73. 1842.
Coll.: Wheeler 136, Winnebago; 333, Crooked Creek.
June, July.
- Salix bebbiana** SARG. Gard. & For. 8: 463. 1895.
Coll.: Wheeler 343, Crooked Creek. July.
- Salix humilis** MARSH, Arb. Am. 140. 1785.
Coll.: Wheeler 181, Winnebago. June.
- Salix discolor** MUHL. Neue Schrift. Ges. Nat. Fr. Berlin, 4:
234. *pl. 6. f. 1.* 1803.
Coll.: Wheeler 138, Winnebago; 334, Crooked Creek.
June, July.

BETULACEÆ.

- Carpinus caroliniana** WALT. Fl. Car. 236. 1788.
Coll.: Lyon 56, Winnebago. June.
- Ostrya virginiana** (MILL.) WILLD. Sp. Pl. 4: 469. 1805.
Coll.: Wheeler 200, Winnebago. June.
- Corylus americana** WALT. Fl. Car. 236. 1788.
Coll.: Wheeler 22, Winnebago. June.
- Corylus rostrata** AIT. Hort. Kew. 3: 364. 1789.
Coll.: Wheeler 223, Winnebago; 275, Crooked Creek.
June.
Not previously collected from southern part of state. Local
on bluffs.
- Betula papyrifera** MARSH. Art. Am. 19. 1785.
Coll.: Wheeler 215, Jefferson. June.
Common, dry ridges. (Plates XXIII., A and XXIV., B.)
- Betula nigra** L. Sp. Pl. 982. 1753.
Coll.: Wheeler 553, Jefferson. Aug.
Common in the lowlands of the Mississippi River.
- Betula lenta** L. Sp. Pl. 983. 1753.
Coll.: Wheeler 165, Winnebago. June.
Not previously collected in the southern part of the state.
Rare.
- Betula lutea** MICHX. f. Arb. Am. 2: 152. *pl. 5.* 1812.
Coll.: Wheeler 199, Winnebago; 271, Crooked Creek;
325, Mayville. June, July.
Frequent in moist locations along Winnebago and Crooked
creeks.

Betula pumila L. Mant. 124. 1767.

Coll. : Wheeler 272, Crooked Creek. June.

Local along Crooked creek, forming large thickets in wet meadows.

Alnus incana (L.) WILLD. Sp. Pl. 4: 335. 1805.

Coll. : Wheeler 617, Brownsville. Aug.

Local at mouth of Wild Cat creek.

FAGACEÆ.

Quercus rubra L. Sp. Pl. 996. 1753.

Coll. : Wheeler 640, 641, Jefferson. Aug.

Common throughout.

Quercus coccinea WANG. Amer. 44. *pl.* 4. *f.* 9. 1787.

Coll. : Wheeler 644, 645, Jefferson. Aug.

Common throughout.

Quercus velutina LAM. Encycl. 1: 721. 1783.

Coll. : Wheeler 642, 643, Jefferson. Aug.

Prof. Sargent writes about 643: "Collection 643, which I call *Q. velutina*, differs from that species as it usually occurs by the much smaller less tomentose buds; the acorns, however, are clearly from *Q. velutina*. I frequently have seen specimens of this same form from the region immediately west of the Great Lakes. It appears sometimes as if it might be a hybrid between *Q. velutina* and *Q. coccinea* but its occurrence is too frequent and its distribution too wide to admit of this supposition. With the present state of our knowledge I can but refer it to *Q. velutina*."

Q. velutina does not seem to be nearly so common in this region as *Q. coccinea*.

Quercus alba L. Sp. Pl. 996. 1753.

Coll. : Wheeler 638, Jefferson. Aug.

Common on ridges of bluffs throughout.

Quercus macrocarpa MICHX. Hist. Chen. Am. 2. *pl.* 23. 1801.

Coll. : Wheeler 639, Jefferson. Aug.

Common throughout.

Quercus platanoides (LAM.) SUDW. Rep. Secy. Agric. 1892: 327. 1893.

Coll. : Wheeler 366, Crooked Creek; 456, 538, 654, Jefferson. July, Aug.

No previous collection reported from Minnesota. Reported by Garrison as frequent at several points near the headwaters of the Mississippi. Frequent on the lowlands of the Mississippi in Jefferson and Crooked Creek townships and in Allamakee Co., Iowa.

Quercus prinoides WILLD. Neue Schrift. Ges. Nat. Fr. Berlin, 3: 397. 1801.

Coll.: Wheeler 360, Crooked Creek. July.

Not previously reported from Minnesota. Whether this is the species reported by Lapham as *Q. castanea* Willd. cannot be ascertained as there are no specimens from Lapham's collection in the Herbarium of the University.

The specimens were collected from two trees on the side of a bluff in section 19, township 102 N., range 4 W.

ULMACEÆ.

Ulmus americana L. Sp. Pl. 226. 1753.

Coll.: Wheeler 24, Winnebago. June.

Ulmus racemosa THOMAS, Am. Jour. Sci. 19: 170. 1831.

Coll.: Wheeler 315, Mayville. July.

Infrequent on lowland near Crooked creek.

Ulmus fulva MICHX. Fl. Bor. Am. 1: 172. 1803.

Coll.: Wheeler 23, Winnebago. June.

Celtis occidentalis L. Sp. Pl. 1044. 1753.

Coll.: Wheeler 240, Winnebago; 278, Crooked Creek;

Lyon 374, Jefferson. June, Aug.

MORACEÆ.

Morus rubra L. Sp. Pl. 986. 1753.

Coll.: Lyon 368, Jefferson. Aug.

Infrequent along Mississippi river.

Humulus lupulus L. Sp. Pl. 1028. 1753.

Coll.: Lyon 312, Winnebago. Aug.

Cannabis sativa L. Sp. Pl. 1027. 1753.

Coll.: Lyon 282, Jefferson. Aug.

URTICACEÆ.

Urtica gracilis AIR. Hort. Kew. 3: 341. 1789.

Coll.: Lyon 126, Winnebago. June.

Urticastrum divaricatum (L.) KUNTZE, Rev. Gen. Pl. 635. 1891.

Coll.: Lyon 117, Winnebago; 358, Jefferson. June, Aug.

Adicea pumila (L.) RAF.; Torr. Fl. N. Y. 2: 223. As synonym. 1843.

Coll.: Wheeler 327, Mayville; 653, Jefferson. July, Aug.

Parietaria pennsylvanica MUHL.; Willd. Sp. Pl. 4: 955. 1806.

Coll.: Lyon 191, Crooked Creek. July.

SANTALACEÆ.

Comandra umbellata (L.) NUTT. Gen. 1: 157. 1818.

Coll.: Lyon 90, Winnebago. June.

ARISTOLOCHACEÆ.

Asarum canadense L. Sp. Pl. 442. 1753.

Coll.: Wheeler 57, Winnebago. June.

POLYGONACEÆ.

Rumex acetosella L. Sp. Pl. 338. 1753.

Coll.: Lyon 130, Winnebago. June.

Rumex crispus L. Sp. Pl. 335. 1753.

Coll.: Lyon 127, 158, Winnebago. June.

Polygonum hartwrightii A. GRAY, Proc. Am. Acad, 8: 294. 1870.

Coll.: Wheeler 606, Brownsville. Aug.

Polygonum emersum (MICHX.) BRITTON, Trans. N. Y. Acad. Sci. 8: 73. 1879.

Coll.: Wheeler 394, 458, Jefferson. July, Aug.

Polygonum incarnatum ELL. Bot. S. C. & Ga. 1: 456. 1817.

Coll.: Wheeler 419, Jefferson. July.

Polygonum hydropiper L. Sp. Pl. 361. 1753.

Coll.: Lyon 494, Jefferson. Aug.

Polygonum punctatum ELL. Bot. S. C. & Ga. 1: 455. 1817.

Coll.: Wheeler 537, 539, Jefferson. Aug.

Polygonum orientale L. Sp. Pl. 362. 1753.

Coll.: Wheeler 448, Jefferson. Aug.

Polygonum virginianum L. Sp. Pl. 360. 1753.

Coll. : Wheeler 580, Jefferson ; 597.

Crooked Creek. Aug.

The only previous collections from Minnesota are Sheldon, Madison lake and Sheldon, Zumbrota. Infrequent in moist woods along Mississippi river.

Polygonum ramosissimum MICHX. Fl. Bor. Am. 1 : 237. 1803.

Coll. : Wheeler 514, Winnebago ; 531, Jefferson. Aug.

Polygonum tenue MICHX. Fl. Bor. Am. 1 : 238. 1803.

Coll. : Wheeler, 351, Crooked Creek. July.

The only previous authentic collection from Minnesota is Moyer, Montevideo. Infrequent on dry sandy ridges.

Polygonum convolvulus L. Sp. Pl. 364. 1753.

Coll. : Wheeler 451, Jefferson. Aug.

Polygonum scandens L. Sp. Pl. 364. 1753.

Coll. : Wheeler 646, Jefferson. Aug.

Polygonum sagittatum L. Sp. Pl. 363. 1753.

Coll. : Wheeler 387, Jefferson. July.

CHENOPODIACEÆ.

Chenopodium botrys L. Sp. Pl. 219. 1753.

Coll. : Lyon 472, Jefferson. Aug.

Salsola tragus L. Sp. Pl. Ed. 2, 322. 1762.

Coll. : Lyon 396, Jefferson. Aug.

AMARANTHACEÆ.

Amaranthus retroflexus L. Sp. Pl. 991. 1753.

Coll. : Wheeler 598, Crooked Creek. Aug.

Amaranthus blitoides S. WATS. Proc. Am. Acad. 12 : 273. 1877.

Coll. : Wheeler 452, Jefferson. Aug.

Acnida tamariscina (NUTT.) WOOD, Bot. & Fl. 289. 1873.

Coll. : Wheeler 522, 547, Jefferson. Aug.

Froelichia floridana (NUTT.) MOQ. in DC. Prodr. 13 : Part 2, 420. 1849.

Coll. : Lyon 304, 325, Jefferson. Aug.

NYCTAGINACEÆ.

Allionia nyctaginea MICHX. Fl. Bor. Am. 1 : 100. 1803.

Coll. : Wheeler 76, Lyon 40, Winnebago. June.

Allionia linearis PURSH, Fl. Am. Sept. 728. 1814.

Coll.: Wheeler 392, Jefferson. July.

Not previously collected in Minnesota. Collections Oestlund 155 and Herrick 256, Minneapolis, in the Herbarium of the University and reported in *Metaspermæ* of Minnesota Valley as *A. linearis* Pursh? should be *A. hirsuta* Pursh.

AIZOACEÆ.

Mollugo verticillata L. Sp. Pl. 89. 1753.

Coll.: Lyon 279, 302, Jefferson. July, Aug.

CARYOPHYLLACEÆ.

Silene stellata (L.) AIT. f. Hort. Kew. 3: 84. 1811.

Coll.: Lyon 254, Wheeler 508, Winnebago. July, Aug.

Silene alba MUHL. Cat. 45. 1813.

Coll.: Lyon 164, Winnebago. June.

The only previous collections from Minnesota are from Goodhue and Winona counties. Frequent along Winnebago and Crooked creeks.

Silene antirrhina L. Sp. Pl. 419. 1753.

Coll.: Wheeler 171, Winnebago. June.

Cerastium longipedunculatum MUHL. Cat. 46. 1813.

Coll.: Lyon 8, Winnebago. June.

NYMPHÆACEÆ.

Nymphæa advena SOLAND. in Ait. Hort. Kew. 2: 226. 1789.

Coll.: Wheeler 307, Crooked Creek; 454, Jefferson. July, Aug. (Plate XXVII., B.)

Castalia tuberosa (PAINE) GREENE, Bull. Torr. Club, 15: 84. 1888.

Coll.: Wheeler 293, 439, 496, Jefferson. July, Aug.

Nelumbo lutea (WILLD.) PERS. Syn. 1: 92. 1805.

Coll.: Wheeler 409, 494, Jefferson. July, Aug.

Abundant in the sloughs of the Mississippi river at Jefferson. (Plate XXV., A.)

CERATOPHYLLACEÆ.

Ceratophyllum demersum L. Sp. Pl. 992. 1753.

Coll.: Lyon 367, 480, Jefferson. Aug.

Common in the sloughs of the Mississippi river at Jefferson and Crooked Creek.

RANUNCULACEÆ.

- Caltha palustris** L. Sp. Pl. 558. 1753.
Coll.: Lyon 244, Crooked Creek. July.
- Actæa rubra** (AIT.) WILLD. Enum. 561. 1809.
Coll.: Lyon 450, Jefferson. Aug.
- Actæa alba** (L.) MILL. Gard. Dict. Ed. 8, No. 2. 1768.
Coll.: Lyon 16, Winnebago. June.
- Aquilegia canadensis** L. Sp. Pl. 533. 1753.
Coll.: Wheeler 84, Winnebago. June.
- Anemone virginiana** L. Sp. Pl. 540. 1753.
Coll.: Lyon 9, Winnebago; 245, Crooked Creek. June, July.
- Anemone canadensis** L. Syst. Ed. 12, 3: App. 231. 1768.
Coll.: Lyon 286½, Jefferson. July.
- Anemone quinquefolia** L. Sp. Pl. 541. 1753.
Coll.: Herb. Wheeler 4, Winnebago. May.
- Hepatica acuta** (PURSH) BRITTON, Ann. N. Y. Acad. Sci. 6: 234. 1891.
Coll.: Wheeler 134, Winnebago. June.
- Syndesmon thalictroides** (L.) HOFFMG. Flora, 15: Part 2, Intell. Bl. 4, 34. 1832.
Coll.: Wheeler 36, Winnebago. June.
- Pulsatilla hirsutissima** (PURSH) BRITTON, Am. N. Y. Acad. Sci. 6: 217. 1891.
Coll.: Wheeler 73, Winnebago. June.
- Clematis virginiana** L. Amoen. Acad. 4: 275. 1759.
Coll.: Wheeler 194, Winnebago; 355, Crooked Creek. June, July.
- Atragene americana** SIMS, Bot. Mag. *pl.* 887. 1806.
Coll.: Wheeler 259, Winnebago; 320, Mayville. June, July.
- Ranunculus delphinifolius** TORR.; Eaton, Man. Ed. 2, 395. 1818.
Coll.: Lyon 201, Crooked Creek. July.
- Ranunculus abortivus** L. Sp. Pl. 551. 1753.
Coll.: Wheeler 15, Winnebago. June.
- Ranunculus pennsylvanicus** L. f. Suppl. 272. 1781.
Coll.: Lyon 364, 378, Jefferson. Aug.

Ranunculus septentrionalis POIR. in Lam. Encycl. 6: 125.
1804.

Coll.: Wheeler 6, Winnebago. June.

Batrachium trichophyllum (CHAIX) BOSSCH, Prodr. Fl. Bot.
5. 1850.

Coll.: Lyon 67, Winnebago. June.

Batrachium divaricatum (SCHRANK) WIMM. Fl. Schles. 1841.

Coll.: Lyon 219, Mayville. July.

Thalictrum dioicum L. Sp. Pl. 545. 1753.

Coll.: Herb. Wheeler 13, Winnebago. June.

Thalictrum purpurascens L. Sp. Pl. 546. 1753.

Coll.: Lyon 99, Winnebago. June.

BERBERIDACEÆ.

Caulophyllum thalictroides (L.) MICHX. Fl. Bor. Am. 1: 205.
1803.

Coll.: Lyon 92, Winnebago. June.

Podophyllum peltatum L. Sp. Pl. 505. 1753.

Coll.: Lyon 1, Wheeler 157, Winnebago. June.

MENISPERMACEÆ.

Menispermum canadense L. Sp. Pl. 340. 1753.

Coll.: Wheeler 188, Winnebago. June.

PAPAVERACEÆ.

Sanguinaria canadensis L. Sp. Pl. 505. 1753.

Coll.: Lyon 169, Crooked Creek. June.

Bicuculla cucullaria (L.) MILLSP. Bull. W. Va. Agric. Exp.
Sta. 2: 327. 1892.

Coll.: Wheeler 12, Winnebago. June.

CRUCIFERÆ.

Lepidium apetalum WILLD. Sp. Pl. 3: 439. 1801.

Coll.: Lyon 123, Winnebago. June.

Sisymbrium officinale (L.) SCOP. Fl. Cam. Ed. 2, 2: 26. 1772.

Coll.: Lyon 422, Winnebago. Aug.

Sisymbrium altissimum L. Sp. Pl. 659. 1753.

Coll.: Lyon 273, Wheeler 481, Jefferson. July, Aug.

Brassica nigra (L.) KOCH, in Röhl, Deutsche Fl. Ed. 3, 4:
713. 1833.

Coll.: Lyon 233, Crooked Creek. July.

- Brassica arvensis** (L.) B.S.P. Prel. Cat. N. Y. 1888.
Coll.: Lyon 86, Winnebago. June.
- Roripa palustris** (L.) BESS. Enum. 27. 1821.
Coll.: Lyon 200, Crooked Creek. July.
- Roripa nasturtium** (L.) RUSBY, Mem. Torr. Club, 3: Part 3,
5. 1893.
Coll.: Lyon 89, Winnebago. June.
- Cardamine bulbosa** (SCHREB.) B.S.P. Prel. Cat. N. Y. 4.
1888.
Coll.: Wheeler 167, Winnebago. June.
- Bursa bursa-pastoris** (L.) BRITTON, Mem. Torr. Club, 5: 172.
1894.
Coll.: Lyon 120, Winnebago. June.
- Camelina sativa** (L.) CRANTZ, Stirp. Austr. 1: 18. 1762.
Coll.: Lyon 213, Mayville. July.
- Draba caroliniana** WALT. Fl. Car. 174. 1788.
Coll.: Lyon 47, Winnebago. June.
- Arabis lævigata** (MUHL.) POIR. in Lam. Encycl. Suppl. 1: 411.
1810.
Coll.: Wheeler 154, Winnebago. June.
- Arabis canadensis** L. Sp. Pl. 665. 1753.
Coll.: Lyon 111, Winnebago; 212, Crooked Creek.
June, July.
- Arabis glabra** (L.) BERNH. Verz. Syst. Erf. 195. 1800.
Coll.: Lyon 122, Winnebago; 227, Mayville. June, July.
- Erysimum cheiranthoides** L. Sp. Pl. 661. 1753.
Coll.: Lyon 187, Crooked Creek; 226, Mayville. July.

CAPPARIDACEÆ.

- Polanisia graveolens** RAF. Am. Journ. Sci. 1: 378. 1819.
Coll.: Lyon 277, Jefferson. July.

CRASSULACEÆ.

- Penthorum sedoides** L. Sp. Pl. 432. 1753.
Coll.: Wheeler 384, Jefferson. July.

SAXIFRAGACEÆ.

- Saxifraga pennsylvanica** L. Sp. Pl. 399. 1753.
Coll.: Wheeler 180, Winnebago. June.
- Heuchera hispida** PURSH, Fl. Am. Sept. 188. 1814.
Coll.: Wheeler 83, Winnebago. June.

Mitella diphylla L. Sp. Pl. 406. 1753.

Coll.: Wheeler 40, Winnebago. June.

Parnassia caroliniana MICHX. Fl. Bor. Am. 1: 184. 1803.

Coll.: Wheeler 587, Crooked Creek; 629, Brownsville.
Aug.

GROSSULARIACEÆ.

Ribes cynosbati L. Sp. Pl. 202. 1753.

Coll.: Wheeler 77, 110, Winnebago. June.

Ribes uva-crispa L. Sp. Pl. 201. 1753.

Coll.: Wheeler 30, 75, 248, Winnebago. June.

Frequently adventive in open woods throughout.

Ribes floridum L'HER. Stirp. Nov. 1: 4. 1784.

Coll.: Lyon 82, Winnebago. June.

HAMAMELIDACEÆ.

Hamamelis virginiana L. Sp. Pl. 124. 1753.

Coll.: Wheeler 150, Winnebago. June.

Reported from southeastern Winona County. No Minnesota specimens in the Herbarium of the University. Local on north side of bluff in section 22 of Winnebago.

ROSACEÆ.

Opulaster opulifolius (L.) KUNTZE, Rev. Gen. Pl. 949. 1891.

Coll.: Lyon 33, 103, Winnebago. June.

Spiræa salicifolia L. Sp. Pl. 489. 1753.

Coll.: Lyon 438, 464, Jefferson. Aug.

Rubus occidentalis L. Sp. Pl. 493. 1753.

Coll.: Lyon 55, Winnebago; Wheeler 453, Jefferson.
June, Aug.

Rubus villosus AIT. Hort. Kew. 2: 210. 1789.

Coll.: Wheeler 105, Lyon 296, Winnebago. June, Aug.

Rubus canadensis L. Sp. Pl. 494. 1753.

Coll.: Wheeler 396, Jefferson. July.

Fragaria americana (PORTER) BRITTON, Bull. Torr. Club, 19: 222. 1892.

Coll.: Wheeler 135, Winnebago. June.

Potentilla arguta PURSH, Fl. Am. Sept. 736. 1814.

Coll.: Lyon 247, Crooked Creek. July.

Potentilla monspeliensis L. Sp. Pl. 499. 1753.

Coll.: Lyon 439, Jefferson. Aug.

- Potentilla canadensis** L. Sp. Pl. 498. 1753.
Coll. : Wheeler 86, Winnebago. June.
- Geum canadense** JACQ. Hort. Vind. 2: 82. *pl.* 175. 1772.
Coll. : Lyon 209, Crooked Creek. July.
- Geum strictum** ART. Hort. Kew. 2: 217. 1789.
Coll. : Wheeler 277, Lyon 195, Crooked Creek. June, July.
- Agrimonia hirsuta** (MUHL.) BICKNELL, Bull. Torr. Club, 23: 509. 1896.
Coll. : Lyon 196, 228, Crooked Creek. July.
- Rose blanda** ART. Hort. Kew. 2: 202. 1789.
Coll. : Lyon 37, 431, Winnebago. June, Aug.
- Rosa arkansana** PORTER, Syn. Fl. Colo. 38. 1874.
Coll. : Wheeler 441, Lyon 343, Jefferson; Lyon 339, Winnebago. Aug.

POMACEÆ.

- Malus ioensis** (WOOD) BRITTON, in Britt. & Brown, Ill. Fl. 2: 235. *f.* 1980. 1897.
Coll. : Wheeler 88, 160, Winnebago; 605, Crooked Creek. June, Aug.
- Amelanchier canadensis** (L.) MEDIC. Geschichte, 79. 1793.
Coll. : Wheeler 37, 500, Winnebago. June, Aug.
- Amelanchier botryapium** (L. f.) DC. Prodr. 2: 632. 1825.
Coll. : Wheeler 253, Winnebago. June.
- Amelanchier alnifolia** NUTT.; T. & G. Fl. N. A. 1: 473.
As synonym. 1840.
Coll. : Wheeler 203, Winnebago. June.
- Cratægus punctata** JACQ. Hort. Vind. 1: 10. *pl.* 28. 1770.
Coll. : Wheeler 141, 651, Winnebago. June, Aug.
- Cratægus coccinea** L. Sp. Pl. 476. 1753.
Coll. : Lyon 101, Winnebago, June.
- Cratægus macracantha** LODD.; Loudon, Arb. Brit. Ed. 2, 2: 819. 1854.
Coll. : Wheeler 499, Winnebago. Aug.
Not previously reported from Minnesota.
- Cratægus tomentosa** L. Sp. Pl. 476. 1753.
Coll. : Lyon 3, Wheeler 140, Winnebago. June.

DRUPACEÆ.

Prunus americana MARSH. Arb. Am. III. 1785.

Coll.: Wheeler 353, Crooked Creek. July.

Prunus nigra ART. Hort. Kew. 2: 165. 1789.

Coll.: Wheeler 321, 354, Mayville; 501, Winnebago. July, Aug.

Not previously reported from Minnesota. This species has been recognized by horticulturists in several parts of the state but no previous authentic collections are known to have been made. It is common on the lowlands of the North and South forks of Crooked creek. Also collected on the banks of Winnebago creek and in East Burns valley, Winona county.

Prunus virginiana L. Sp. Pl. 473. 1753.

Coll.: Wheeler 345, Crooked Creek. July.

Prunus serotina EHRH. Beitr. 3: 20. 1788.

Coll.: Wheeler 178, Winnebago. June.

CÆSALPINACEÆ.

Cassia chamæcrista L. Sp. Pl. 379. 1753.

Coll.: Lyon 256, Jefferson. July.

Gleditsia triacanthos L. Sp. Pl. 1056. 1753.

Coll.: Lyon and Wheeler; 413, W. Jefferson. July.

Not previously reported from Minnesota. This tree has been frequently cultivated for ornament throughout the southern part of the state but no native trees have previously been reported. It is frequent on the islands of the Mississippi river in northeastern Iowa and extends north along the river into Houston county, Minnesota, where it probably reaches its northern limit. The tree from which the collection was made is 59 feet high and has a trunk-circumference of 6 feet, 3 feet from the ground.

Gymnocladus dioica KOCH, Dendrol. 1: 5. 1869.

Coll.: Lyon 193, 230, Crooked Creek; 271, Jefferson. July. (Plate XXIV., A.)

PAPILIONACEÆ.

Baptisia bracteata ELL. Bot. S. C. & Ga. 1: 469. 1817.

Coll.: Wheeler 94, Lyon 34, Winnebago; Lyon 202, Crooked Creek. June, July.

- Baptisia leucantha** T. & G. Fl. N. A. 1: 385. 1840.
Coll.: Lyon 194, Crooked Creek. July.
- Trifolium hybridum** L. Sp. Pl. 766. 1753.
Coll.: Lyon 421, Winnebago. Aug.
- Trifolium repens** L. Sp. Pl. 767. 1753.
Coll.: Lyon 118, Winnebago. June.
- Amorpha fruticosa** L. Sp. Pl. 713. 1753.
Coll.: Lyon 473, Jefferson. Aug.
- Amorpha canescens** PURSH, Fl. Am. Sept. 467. 1814.
Coll.: Wheeler 291, Mayville. July.
- Kuhnistera candida** (WILLD.) KUNTZE, Rev. Gen. Pl. 192.
1891.
Coll.: Wheeler 397, Jefferson. July.
- Kuhnistera purpurea** (VENT.) MACM. Met. Minn. 329. 1892.
Coll.: Lyon 262, Jefferson. July.
- Astragalus carolinianus** L. Sp. Pl. 757. 1753.
Coll.: Lyon 257, 395, Jefferson. July, Aug.
- Meibomia grandiflora** (WALT.) KUNTZE, Rev. Gen. Pl. 196.
1891.
Coll.: Lyon 198, 246, Crooked Creek. July.
- Meibomia dillenii** (DARL.) KUNTZE, Rev. Gen. Pl. 195. 1891.
Coll.: Wheeler 482, Jefferson. Aug.
No previously collected Minnesota specimens in the Herbarium of the University.
- Meibomia illinoensis** (A. GRAY) KUNTZE, Rev. Gen. Pl. 198.
1891.
Coll.: Wheeler 390, 446, Jefferson; 609, Brownsville.
July, Aug.
Not previously reported from Minnesota. Frequent and in some places common in dry fields and hillsides.
- Meibomia canadensis** (L.) KUNTZE, Rev. Gen. Pl. 195. 1891.
Coll.: Wheeler 331, Crooked Creek. July.
- Lespedeza capitata** MICHX. Fl. Bor. Am. 2: 71. 1803.
Coll.: Wheeler 525, Jefferson. Aug.
- Lathyrus venosus** MUHL.; Willd. Sp. Pl. 3: 1092. 1803.
Coll.: Lyon 48, Winnebago. June.
- Lathyrus ochroleucus** Hook. Fl. Bor. Am. 1: 159. 1833.
Coll.: Lyon 87, Winnebago. June.

Falcata comosa (L.) KUNTZE, Rev. Gen. Pl. 182. 1891.

Coll.: Wheeler 507, Lyon 332, Winnebago; Lyon 469, Jefferson. Aug.

Falcata pitcheri (T. & G.) KUNTZE, Rev. Gen. Pl. 182. 1891.

Coll.: Wheeler 573, Jefferson. Aug.

Not previously reported from Minnesota. Several specimens of this species, previously reported as *F. comosa*, have been collected in southern Minnesota. Probably common throughout the southern part of the state.

Apios apios (L.) MACM. Bull. Torr. Club, 19: 15. 1892.

Coll.: Wheeler, 337, Crooked Creek; Wheeler 399, Lyon 388, Jefferson. July, Aug.

Strophostyles helvola (L.) BRITTON in Britt. & Brown, Ill. Fl.

2: 338. f. 2235. 1897.

Coll.: Lyon 387, Jefferson. Aug.

GERANIACEÆ.

Geranium maculatum L. Sp. Pl. 681. 1753.

Coll.: Lyon 4, Winnebago. June.

OXALIDACEÆ.

Oxalis violacea L. Sp. Pl. 434. 1753.

Coll.: Lyon 50, Winnebago. June.

Oxalis stricta L. Sp. Pl. 435. 1753.

Coll.: Lyon 81, Winnebago. June.

LINACEÆ.

Linum sulcatum RIDDEL, Suppl. Cat. Ohio Pl. 10. 1836.

Coll.: Wheeler 290, Mayville; 431, Jefferson. July.

RUTACEÆ.

Xanthoxylum americanum MILL. Gard. Dict. Ed. 8, No. 2. 1768.

Coll.: Wheeler 132, 413, Winnebago. June, Aug.

POLYGALACEÆ.

Polygala verticillata L. Sp. Pl. 706. 1753.

Coll.: Wheeler 342, Crooked Creek; 428, Jefferson. July.

Polygala viridescens L. Sp. Pl. 705. 1753.

Coll.: Lyon 483, Jefferson. Aug.

- Polygala senega* L. Sp. Pl. 704. 1753.
Coll. : Lyon 21, Winnebago. June.

EUPHORBIACEÆ.

- Acalypha virginica* L. Sp. Pl. 1003. 1753.
Coll. : Lyon 349, 397, 463, Jefferson. Aug.
- Euphorbia glyptosperma* ENGELM. Bot. Mex. Bound. Surv. 187. 1859.
Coll. : Wheeler 434, Jefferson. July.
- Euphorbia maculata* L. Sp. Pl. 455. 1753.
Coll. : Wheeler 430, Jefferson. July.
- Euphorbia nutans* LAG. Gen. & St. 17. 1816.
Coll. : Wheeler 336, Crooked Creek. July.
- Euphorbia corollata* L. Sp. Pl. 459. 1753.
Coll. : Lyon 189, Wheeler 375, Crooked Creek. July.
- Euphorbia heterophylla* L. Sp. Pl. 453. 1753.
Coll. : Wheeler 466, Jefferson. Aug.
- Euphorbia cyparissias* L. Sp. Pl. 461. 1753.
Coll. : Lyon 437, Jefferson. Aug.

ANACARDIACEÆ.

- Rhus hirta* (L.) SUDW. Bull. Torr. Club, 19: 82. 1892.
Coll. : Lyon 319, Jefferson. Aug.
- Rhus glabra* L. Sp. Pl. 265. 1753.
Coll. : Lyon 272, Jefferson. July.
- Rhus radicans* L. Sp. Pl. 266. 1753.
Coll. : Lyon 327, 350, Jefferson. Aug.

CELASTRACEÆ.

- Euonymus atropurpureus* JACQ. Hort. Vind. 2: 5. *pl.* 120. 1772.
Coll. : Lyon 140, Winnebago; 263, Jefferson. June, July.
- Celastrus scandens* L. Sp. Pl. 196. 1753.
Coll. : Wheeler 104, Winnebago; Lyon 380, Jefferson. June, Aug.

STAPHYLEACEÆ.

- Staphylea trifolia* L. Sp. Pl. 270. 1753.
Coll. : Wheeler 202, Winnebago. June.

ACERACEÆ.

Acer saccharinum L. Sp. Pl. 1055. 1753.

Coll.: Lyon 149, Winnebago; 274, Jefferson. June, July.

Acer nigrum MICHX. f. Hist. Arb. Am. 2: 238. *pl. 16*. 1810.

Coll.: Wheeler 149, Winnebago. June.

Acer spicatum LAM. Encycl. 2: 381. 1786.

Coll.: Wheeler 163, 198, Winnebago; 319, Mayville; 625, Brownsville. June, Aug.

Frequent on moist shaded cliffs throughout.

Acer negundo L. Sp. Pl. 1056. 1753.

Coll.: Lyon 119, Winnebago. June.

BALSAMINACEÆ.

Impatiens aurea MUHL. Cat. 26. 1813.

Coll.: Wheeler 328, Mayville. July.

RHAMNACEÆ.

Ceanothus americanus L. Sp. Pl. 195. 1753.

Coll.: Lyon 66, Winnebago; Wheeler 356, Crooked Creek. June, July.

Ceanothus ovatus DESF. Hist. Arb. 2: 381. 1809.

Coll.: Wheeler 92, Lyon 66½, Winnebago. June.

VITACEÆ.

Vitis vulpina L. Sp. Pl. 203. 1753.

Coll.: Wheeler 139, Winnebago; 344, Crooked Creek. June, July.

Parthenocissus quinquefolia (L.) PLANCH. in DC. Mon. Phan. 5: Part 2, 448. 1887.

Coll.: Wheeler 235, Winnebago; Lyon 379, Jefferson. June, Aug.

TILIACEÆ.

Tilia americana L. Sp. Pl. 514. 1753.

Coll.: Lyon 211, Mayville. July.

MALVACEÆ.

Malva rotundifolia L. Sp. Pl. 688. 1753.

Coll.: Lyon 491, Jefferson. Aug.

Napæa dioica L. Sp. Pl. 686. 1753.

Coll.: Lyon 266, Jefferson. July.

Previously collected at Vasa and Lanesboro. Rare on lowland near Winnebago creek.

Abutilon abutilon (L.) RUSBY, Mem. Torr. Club, 5: 222. 1894.

Coll.: Lyon 283, Jefferson. July.

HYPERICACEÆ.

Hypericum ascyron L. Sp. Pl. 783. 1753.

Coll.: Lyon 235, Crooked Creek; 436, Winnebago. June, Aug.

Hypericum maculatum WALT. Fl. Car. 189. 1788.

Coll.: Wheeler 442, 483, Jefferson; 615, Brownsville; Lyon 452, Jefferson. Aug.

Hypericum majus (A. GRAY) BRITTON, Mem. Torr. Club, 5: 225. 1894.

Coll.: Wheeler 427, Jefferson; 601, Crooked Creek. July, Aug.

CISTACEÆ.

Helianthemum majus (L.) B.S.P. Prel. Cat. N. Y. 6. 1888.

Coll.: Lyon 167, Crooked Creek; Wheeler 477, Jefferson; 633, Brownsville. Aug.

Helianthemum canadense (L.) MICHX. Fl. Bor. Am. 1: 308. 1803.

Coll.: Wheeler 631, Brownsville. Aug.

Lechea stricta LEGGETT; BRITTON, Bull. Torr. Club, 21: 251. 1894.

Coll.: Wheeler 359, Crooked Creek; Lyon 331, Winnebago. July, Aug.

VIOLACEÆ.

Viola pedatifida DON, Gard. Dict. 1: 320. 1831.

Coll.: Wheeler 429, Jefferson. July.

Viola obliqua HILL, Hort. Kew. 316. *pl.* 12. 1769.

Coll.: Wheeler 114, Winnebago. June.

Viola pedata L. Sp. Pl. 933. 1753.

Coll.: Wheeler 216, Jefferson. June.

- Viola pubescens* AIT. Hort. Kew. 3: 290. 1789.
Coll.: Wheeler 205, Winnebago. June.

THYMELEACEÆ.

- Dirca palustris* L. Sp. Pl. 358. 1753.
Coll.: Wheeler 520, Winnebago. Aug.
Rare in moist thickets near Winnebago creek.

LYTHRACEÆ.

- Lythrum alatum* PURSH, Fl. Am. Sept. 334. 1814.
Coll.: Lyon 281, Wheeler 416, Jefferson. July.

ONAGRACEÆ.

- Epilobium coloratum* MUHL.; Willd. Enum. 1: 411. 1809.
Coll.: Wheeler 479, Jefferson; 608, Brownsville. Aug.
- Epilobium adenocaulon* HAUSSK. Oest. Bot. Zeit. 29: 119.
1879.
Coll.: Wheeler 323, Mayville; 595, Crooked Creek; Lyon
457, Jefferson. July, Aug.
- Onagra biennis* (L.) SCOP. Fl. Carn. Ed. 2, 1: 269. 1772.
Coll.: Lyon 166½, Winnebago; 286, Jefferson. June,
July.
- Oenothera rhombipetala* NUTT.; T. & G. Fl. N. A. 1: 493.
1840.
Coll.: Lyon 323, Jefferson. Aug.
- Gaura biennis* L. Sp. Pl. 347. 1753.
Coll.: Wheeler 574, Jefferson. Aug.
- No previous authentic collection from Minnesota. There are
no Minnesota specimens in the Herbarium of the Univer-
sity. Miss Manning's collection of 1883 from Pepin, Wis.,
is probably the one upon which is based the report of this
species by Upham and others.
- Circæa lutetiana* L. Sp. Pl. 9. 1753.
Coll.: Wheeler 270, Crooked Creek. June.
- Circæa alpina* L. Sp. Pl. 9. 1753.
Coll.: Lyon 152, Winnebago. June.

ARALIACEÆ.

- Aralia racemosa* L. Sp. Pl. 273. 1753.
Coll.: Lyon 345, Jefferson. Aug.

Aralia nudicaulis L. Sp. Pl. 274. 1753.

Coll.: Lyon 15, Winnebago. June.

Panax quinquefolium L. Sp. Pl. 1058. 1753.

Coll.: Lyon 210, Mayville; Wheeler 469, Jefferson. July, Aug.

UMBELLIFERÆ.

Angelica atropurpurea L. Sp. Pl. 251. 1753.

Coll.: Wheeler 311, Crooked Creek. July.

Heracleum lanatum MICHX. Fl. Bor. Am. 1: 166. 1803.

Coll.: Lyon 93, Winnebago. June.

Sanicula marylandica L. Sp. Pl. 235. 1753.

Coll.: Wheeler 175, Winnebago. June.

Sanicula gregaria BICKNELL, Bull. Torr. Club, 22: 354. 1895.

Coll.: Wheeler 177, Winnebago. June.

The only precious collection from Minnesota is that of Sheldon, Milaca, 1892.

Sanicula canadensis L. Sp. Pl. 235. 1753.

Coll.: Lyon 260, Jefferson. July.

Sanicula trifoliata BICKNELL, Bull. Torr. Club, 22: 359. 1895.

Coll.: Lyon 214, Mayville. July.

Not previously reported from Minnesota.

Pimpinella integerrima (L.) A. GRAY, Proc. Am. Acad. 7: 345. 1868.

Coll.: Wheeler 179, Winnebago. June.

Washingtonia claytoni (MICHX.) BRITTON in Brit. & Brown, Ill. Fl. 2: 530. f. 2680. 1897.

Coll.: Lyon 7, Winnebago. June.

Sium cicutæfolium GMEL. Syst. 2: 482. 1791.

Coll.: Wheeler 545, Lyon 449, Jefferson. Aug.

Zizia aurea (L.) KOCH, Nov. Act. Caes. Leop. 12: 129. 1825.

Coll.: Wheeler 174, Winnebago; Lyon 261, Jefferson. June, July.

Zizia cordata DC. Prodr. 4: 100. 1830.

Coll.: Lyon 292, 352, Jefferson. July.

Cicuta maculata L. Sp. Pl. 256. 1753.

Coll.: Wheeler 338, Crooked Creek. July.

Cicuta bulbifera L. Sp. Pl. 255. 1753.

Coll.: Wheeler 607, Brownsville. Aug.

Deringa canadensis (L.) KUNTZE, Rev. Gen. Pl. 266. 1891.

Coll.: Wheeler 193, Winnebago. June.

Berula erecta (HUDS.) COVILLE, Contr. Nat. Herb. 4: 115. 1893.

Coll.: Wheeler 588, Crooked Creek. Aug.

In cold springs at the head of Clear creek.

Hydrocotyle americana L. Sp. Pl. 234. 1753.

Coll.: Wheeler 314, Mayville. July.

The only previously reported locality of collection is St. Croix Falls. Rare in moist woods near Crooked creek.

CORNACEÆ.

Cornus circinata L'HER. Cornus, 7. pl. 3. 1788.

Coll.: Wheeler 81, Winnebago. June.

Cornus amomum MILL. Gard. Dict. Ed. 8, No. 5. 1768.

Coll.: Lyon 351, Jefferson. Aug.

Cornus stolonifera MICHX. Fl. Bor. Am. 1: 92. 1803.

Coll.: Wheeler 69, 173, Winnebago. June.

Cornus candidissima MARSH, Arb. Am. 35. 1785.

Coll.: Wheeler 172, Winnebago. June.

PYROLACEÆ.

Pyrola elliptica NUTT. Gen. 1: 273. 1818.

Coll.: Wheeler 191, Winnebago; 276, Crooked Creek. June, July.

. ERICACEÆ.

Arctostaphylos uva-ursi (L.) SPRENG. Syst. 2: 287. 1825.

Coll.: Lyon 116, Jefferson. June.

On a sandy point of a bluff in section 19 of Jefferson.

PRIMULACEÆ.

Lysimachia terrestris (L.) B.S.P. Prel. Cat. N. Y. 34. 1888.

Coll.: Lyon 249, Crooked Creek. July.

Steironema ciliatum (L.) RAF. Ann. Gen. Phys. 7: 192. 1820.

Coll.: Lyon 251, Crooked Creek. July.

Dodecatheon meadia L. Sp. Pl. 144. 1753.

Coll.: Wheeler 340, Crooked Creek. July.

Previously collected only in Winona and Wabasha counties.
Rare in moist woods.

OLEACEÆ.

Fraxinus lanceolata BORCK. Handb. Forst. Bot. 1: 826. 1800.

Coll.: Lyon 300, Jefferson. Aug.

Fraxinus nigra MARSH. Arb. Am. 51. 1785.

Coll.: Lyon 173, Crooked Creek. June. (Plate XXIII., B.)

GENTIANACEÆ.

Gentiana crinita FROEL. Gen. 112. 1796.

Coll.: Lyon 454, 488, Jefferson. Aug.

Gentiana quinquefolia L. Sp. Pl. 230. 1753.

Coll.: Lyon 455, 487, Jefferson. Aug.

Gentiana flavida A. GRAY, Journ. Sci. (II.) 1: 180. 1846.

Coll.: Wheeler 516, Winnebago; 596, Crooked Creek.
Aug.

APOCYNACEÆ.

Apocynum androsæmifolium L. Sp. Pl. 213. 1753.

Coll.: Lyon 188, Crooked Creek. July.

Apocynum cannabinum L. Sp. Pl. 213. 1753.

Coll.: Lyon 471, Jefferson. Aug.

Apocynum cannabinum glaberrimum DC. Prodr. 8: 439. 1844.

Coll.: Lyon 357, Jefferson. Aug.

ASCLEPIADACEÆ.

Asclepias tuberosa L. Sp. Pl. 217. 1753.

Coll.: Wheeler 287, 369, Crooked Creek; Lyon 356,
Jefferson. July, Aug.

Asclepias incarnata L. Sp. Pl. 215. 1753.

Coll.: Lyon 177, Winnebago; 365, Jefferson. June, Aug.

Asclepias obtusifolia MICHX. Fl. Bor. Am. 1: 115. 1803.

Coll.: Wheeler 569, Jefferson. Aug.

Previously reported only by Lapham. Infrequent on dry hillsides.

Asclepias exaltata (L.) MUHL. Cat. 28. 1813.

Coll.: Lyon 178, Winnebago. July.

Asclepias syriaca L. Sp. Pl. 214. 1753.

Coll.: Lyon 176, Winnebago. July.

Asclepias verticillata L. Sp. Pl. 217. 1753.

Coll.: Wheeler 286, Crooked Creek; 378, Jefferson. July.

Acerates viridiflora (RAF.) EATON, Man. Ed. 5, 90. 1829.

Coll.: Lyon 179, Winnebago; 309½, Jefferson. July, Aug.

CONVOLVULACEÆ.

Convolvulus sepium L. Sp. Pl. 153. 1753.

Coll.: Wheeler 306, Crooked Creek. July.

Convolvulus spithameus L. Sp. Pl. 158. 1753.

Coll.: Wheeler 207, Winnebago; 358, 371, Crooked Creek; 385, Jefferson. June, July.

CUSCUTACEÆ.

Cuscuta indecora CHOISY, Mem. Soc. Gen. 9: 278. *pl.* 3. *f.* 5. 1841.

Coll.: Wheeler 436, 557, 647, Jefferson. July, Aug.

Cuscuta coryli ENGELM. Am. Journ. Sci. 43: 337. *f.* 7-11. 1842.

Coll.: Wheeler 503, Winnebago. Aug.

Cuscuta gronovii WILLD.: R. & S. Syst. 6: 205. 1820.

Coll.: Wheeler 308, 592, Crooked Creek; 438, 440, Jefferson. July, Aug.

Cuscuta paradoxa RAF. Ann. Nat. 13. 1820.

Coll.: Wheeler 437, 648, Jefferson. July, Aug.

POLEMONIACEÆ.

Phlox pilosa L. Sp. Pl. 152. 1753.

Coll.: Herb. Wheeler 14, Winnebago. June.

Phlox divaricata L. Sp. Pl. 152. 1753.

Coll.: Lyon 5, Winnebago. June.

Polemonium reptans L. Syst. Ed. 10, No. 1. 1759.

Coll.: Wheeler 33, Winnebago. June.

HYDROPHYLLACEÆ.

Hydrophyllum virginicum L. Sp. Pl. 146. 1753.

Coll.: Lyon 11, Winnebago. June.

Hydrophyllum appendiculatum MICHX. Fl. Bor. Am. 1: 134. 1803.

Coll.: Wheeler 324, Mayville. July.

- Macrocalyx nyctelea** (L.) KUNTZE, Rev. Gen. Pl. 434. 1891.
Coll. : Lyon 19, Winnebago. July.

BORAGINACEÆ.

- Lappula lappula** (L.) KARST. Deutsch. Fl. 979. 1880-83.
Coll. : Lyon 186, Crooked Creek. July.
- Lappula virginianum** (L.) GREENE, Pittonia, 2: 182. 1891.
Coll. : Lyon 237, Mayville. July.
- Lithospermum gmelini** (MICHX.) A. S. HITCHCOCK, Spring Fl. Manh. 30. 1894.
Coll. : Lyon 281½, Jefferson. July.
- Lithospermum canescens** (MICHX.) LEHM. Asperif. 305. 1818.
Coll. : Lyon 27, Winnebago. June.
- Lithospermum angustifolium** MICHX. Fl. Bor. Am. 1: 130. 1803.
Coll. : Wheeler 450, Jefferson. Aug.
- Onosmodium caroliniana** (LAM.) DC. Prodr. 10: 70. 1846.
Coll. : Wheeler 352, Crooked Creek. July.
- Lycopsis arvensis** L. Sp. Pl. 139. 1753.
Coll. : Lyon 110, Winnebago. June.
Not previously reported from Minnesota.

VERBENACEÆ.

- Verbena urticifolia** L. Sp. Pl. 20. 1753.
Coll. : Wheeler 406, 548, Jefferson. July, Aug.
- Verbena hastata** L. Sp. Pl. 20. 1753.
Coll. : Wheeler 403, Jefferson. July.
- Verbena stricta** VENT. Desc. Pl. Jard. Cels. pl. 53. 1800.
Coll. : Wheeler 401, Jefferson. July.
- Verbena bracteosa** MICHX. Fl. Bor. Am. 2: 13. 1803.
Coll. : Wheeler 635, Brownsville. Aug.
- Lippia lanceolata** MICHX. Fl. Bor. Am. 2: 15. 1803.
Coll. : Lyon 279, Jefferson; Wheeler 622, Brownsville.
July, Aug.
Common on the very low lands of the Mississippi river.

LABIATÆ.

- Teucrium canadense** L. Sp. Pl. 564. 1753.
Coll. : Wheeler 414, Jefferson. July.

Scutellaria lateriflora L. Sp. Pl. 598. 1753.

Coll.: Wheeler 455, Jefferson; 517, Winnebago. Aug.

Scutellaria cordifolia MUHL. Cat. 56. 1813.

Coll.: Wheeler 468, Jefferson. Aug.

Scutellaria parvula MICHX. Fl. Bor. Am. 2: 11. 1803.

Coll.: Lyon 39, Winnebago. June.

Agastache scrophulariæfolia (WILLD.) KUNTZE, Rev. Gen. Pl. 511. 1891.

Coll.: Wheeler, 465, Jefferson; Lyon 315, Winnebago. Aug.

Nepeta cataria L. Sp. Pl. 570. 1753.

Coll.: Lyon 288, 492, Jefferson. July.

Glecoma hederacea L. Sp. Pl. 578. 1753.

Coll.: Lyon 229, Crooked Creek. July.

Prunella vulgaris L. Sp. Pl. 600. 1753.

Coll.: Wheeler 407, Jefferson. July.

Physostegia virginiana (L.) BENTH. Lab. Gen. and Sp. 504. 1834.

Coll.: Lyon 295, Jefferson. July.

Leonurus cardiaca L. Sp. Pl. 584. 1753.

Coll.: Wheeler 256, Lyon 418, Winnebago; Wheeler 295, Mayville. June, July, Aug.

Stachys palustris L. Sp. Pl. 580. 1753.

Coll.: Wheeler 300, Crooked Creek. July.

Monarda fistulosa L. Sp. Pl. 22. 1753.

Coll.: Lyon 185, Crooked Creek. July.

Blephila hirsuta (PURSH) TORR. Fl. U. S. 27. 1824.

Coll.: Lyon 225, Mayville; Wheeler 498, Winnebago. July, Aug.

Hedeoma pulegioides (L.) PERS. Syn. 2: 131. 1807.

Coll.: Wheeler 610, Brownsville. Aug.

Previously reported from the Mississippi river by Garrison and Miss Manning, but there are no Minnesota specimens in the Herbarium of the University.

Hedeoma hispida PURSH, Fl. Am. Sept. 414. 1814.

Coll.: Lyon 51, Winnebago. June.

Clinopodium vulgare L. Sp. Pl. 587. 1753.

Coll.: Lyon 411, Winnebago. Aug.

Koelia virginiana (L.) MACM. Met. Minn. 452. 1892.

Coll. : Wheeler 363, Crooked Creek ; 405, Jefferson. July.

Lycopus virginicus L. Sp. Pl. 21. 1753.

Coll. : Wheeler 537, Jefferson. Aug.

Lycopus rubellus MOENCH, Meth. Suppl. 146. 1802.

Coll. : Lyon 314, 417, Winnebago. Aug.

Lycopus americanus MUHL. ; Bart. Fl. Phil. Prodr. 15. 1815.

Coll. : Lyon 335, 348, Jefferson. Aug.

Lycopus lucidus TURCZ. ; Benth. in DC. Prodr. 12 : 178. 1848.

Coll. : Lyon 459, Jefferson. Aug.

Mentha canadensis L. Sp. Pl. 577. 1753.

Coll. : Lyon 199, Crooked Creek. July.

SOLANACEÆ.

Physalis philadelphica LAM. Encycl. 2 : 101. 1786.

Coll. : Lyon 359, Jefferson. Aug.

Mr. Rydberg says: "This is a very peculiar form that I have never seen before. It may be a new species but in order to make a good description fruit is required. At present it should be referred to *P. philadelphica* with which it agrees except in the very large and broad leaves. In that respect it resembles *P. macrophysa* Rydb. but the latter is a perennial not an annual as this plant."

Physalis virginiana MILL. Gard. Dict. Ed. 8, No. 4. 1768.

Coll. : Lyon 63, Winnebago. June.

Physalis heterophylla NEES, Linnæa, 6 : 463. 1831.

Coll. : Lyon 150, Winnebago. June.

Solanum nigrum L. Sp. Pl. 186. 1753.

Coll. : Lyon 192, Crooked Creek. July.

Datura tatula L. Sp. Pl. Ed. 2, 256. 1762.

Coll. : Wheeler 379, Jefferson. July.

SCROPHULARIACEÆ.

Verbascum thapsus L. Sp. Pl. 177. 1753.

Coll. : Wheeler 474, Jefferson. Aug.

Scrophularia marylandica L. Sp. Pl. 619. 1753.

Coll. : Lyon 190, Winnebago ; 353, Jefferson. June, Aug.

Chelone glabra L. Sp. Pl. 611. 1753.

Coll. : Wheeler 586, Crooked Creek. Aug.

Mimulus ringens L. Sp. Pl. 634. 1753.

Coll.: Wheeler 383, 546, Jefferson. July, Aug.

Mimulus jamesii T. & G.; BENTH. in DC. Prodr. 10: 371. 1846.

Coll.: Lyon 68, Winnebago; Wheeler 589, Crooked Creek. June, Aug.

Ilysanthes gratioloides (L.) BENTH. in DC. Prodr. 10: 419. 1846.

Coll.: Lyon 361, 382, Jefferson; Wheeler 578½, Crooked Creek. Aug.

Veronica americana SCHWEIN.; BENTH. in DC. Prodr. 10: 468. 1846.

Coll.: Wheeler 147, Winnebago. June.

Veronica peregrina L. Sp. Pl. 14. 1753.

Coll.: Lyon 83, Winnebago; Wheeler 415, Jefferson. June, July.

Leptandra virginica (L.) NUTT. Gen. 1: 7. 1818.

Coll.: Lyon 234, 250, Crooked Creek. July.

Dasystoma grandiflora (BENTH.) WOOD. Bot. & Flor. 231. 1873.

Coll.: Wheeler 512, Winnebago. Aug.

This is the first authentic specimen of this seen from Minnesota.

Gerardia aspera DOUGL.: BENTH. in DC. Prodr. 10: 517. 1846.

Coll.: Lyon 407, Jefferson. Aug.

Gerardia tenuifolia VAHL, Symb. Bot. 3: 79. 1794.

Coll.: Lyon 406, 456, Wheeler 575, Jefferson; Wheeler 602, Crooked Creek. Aug.

Castilleja coccinea (L.) SPRENG. Syst. 2: 775. 1825.

Coll.: Wheeler 85, Winnebago. June.

Castilleja sessiliflora PURSH, Fl. Am. Sept. 738. 1814.

Coll.: Lyon 69, Winnebago. June.

Pedicularis lanceolata MICHX. Fl. Bor. Am. 2: 18. 1803.

Coll.: Wheeler 515, Winnebago; 600, Crooked Creek. Aug.

Pedicularis canadensis L. Mant. 86. 1767.

Coll.: Lyon 35, Winnebago. June.

LENTIBULARIACEÆ.

Utricularia vulgaris L. Sp. Pl. 18. 1753.

Coll.: Lyon 267, Wheeler 459, Jefferson. July, Aug.

OROBANCHACEÆ.

Thalesia uniflora (L.) BRITTON, Mem. Torr. Club, 5: 298.
1894.

Coll.: Lyon 70, Winnebago. June.

PHRYMACEÆ.

Phryma leptostachya L. Sp. Pl. 601. 1753.

Coll.: Wheeler 298, Crooked Creek. July.

PLANTAGINACEÆ.

Plantago major L. Sp. Pl. 112. 1753.

Coll.: Lyon 124, Winnebago. June.

RUBIACEÆ.

Cephalanthus occidentalis L. Sp. Pl. 95. 1753.

Coll.: Wheeler 365, Crooked Creek; 435, Jefferson; 624,
Brownsville. July, Aug.

Common on the lowlands of the Mississippi river.

Galium aparine L. Sp. Pl. 108. 1753.

Coll.: Wheeler 9, Winnebago. June.

Galium boreale L. Sp. Pl. 108. 1753.

Coll.: Lyon 53, Winnebago; 199½, Crooked Creek.
June, July.

Galium triflorum MICHX. Fl. Bor. Am. 1: 80. 1803.

Coll.: Wheeler 41, Winnebago. June.

Galium trifidum L. Sp. Pl. 105. 1753.

Coll.: Wheeler 42, Winnebago. June.

Galium asprellum MICHX. Fl. Bor. Am. 1: 78. 1803.

Coll.: Wheeler 593, Crooked Creek. Aug.

CAPRIFOLIACEÆ.

Sambucus canadensis L. Sp. Pl. 269. 1753.

Coll.: Wheeler 412, 649, Jefferson. July, Aug.

Sambucus pubens MICHX. Fl. Bor. Am. 1: 181. 1803.

Coll.: Wheeler 133, Winnebago. June.

Viburnum opulus L. Sp. Pl. 268. 1753.

Coll.: Lyon 129, Winnebago; Wheeler 591, Crooked
Creek. June, Aug.

Viburnum dentatum L. Sp. Pl. 268. 1753.

Coll.: Wheeler 201, Winnebago. June.

- Viburnum lentago** L. Sp. Pl. 268. 1753.
Coll.: Wheeler 39, Winnebago. June.
- Triosteum perfoliatum** L. Sp. Pl. 176. 1753.
Coll.: Wheeler 2, Winnebago. June.
- Lonicera dioica** L. Syst. Ed. 12, 165. 1767.
Coll.: Wheeler 190, Winnebago. June.
- Lonicera sullivanii** A. GRAY, Proc. Amer. Acad. 19: 76. 1883.
Coll.: Wheeler 122, Winnebago. June.
- Diervilla diervilla** (L.) MACM., Bull. Torr. Club, 19: 15.
1892.
Coll.: Lyon 46, Winnebago. June.

ADOXACEÆ.

- Adoxa moschatellina** L. Sp. Pl. 367. 1753.
Coll.: Wheeler 196, Winnebago. June.
Frequent in moist woods.

VALERIANACEÆ.

- Valeriana edulis** NUTT. in T. & G. Fl. N. A. 2: 48. 1841.
Coll.: Wheeler 159, Winnebago. June.

CAMPANULACEÆ.

- Campanula rotundifolia** L. Sp. Pl. 163. 1753.
Coll.: Lyon 36, Winnebago. June.
- Campanula aparinoides** PURSH, Fl. Am. Sept. 159. 1814.
Coll.: Lyon 194½, Crooked Creek. July.
- Campanula americana** L. Sp. Pl. 164. 1753.
Coll.: Wheeler 339, Crooked Creek. July.
- Legouzia perfoliata** (L.) BRITTON, Mem. Torr. Club, 5: 309.
1894.
Coll.: Lyon 148, Winnebago. June.
- Lobelia cardinalis** L. Sp. Pl. 930. 1753.
Coll.: Wheeler 464, Jefferson; 578, Crooked Creek. Aug.
- Lobelia syphilitica** L. Sp. Pl. 931. 1753.
Coll.: Lyon 310, 340, Jefferson. Aug.
- Lobelia spicata** LAM. Encycl. 3: 587. 1789.
Coll.: Lyon 115, Jefferson. June.
- Lobelia inflata** L. Sp. Pl. 931. 1753.
Coll.: Wheeler 480, 554, Jefferson; 612, Brownsville.
Aug.

CICHORIACEÆ.

Cichorium intybus L. Sp. Pl. 813. 1753.

Coll. : Wheeler 594, Lyon 468, Crooked Creek. Aug.

Adopogon virginicum (L.) KUNTZE, Rev. Gen. Pl. 304. 1891.

Coll. : Lyon 20, 337, Wheeler 506, Winnebago. June, Aug.

Taraxacum taraxacum (L.) KARST. Deutsch. Fl. 1138. 1880
-83.

Coll. : Lyon 121, Winnebago. June.

Sonchus asper (L.) ALL. Fl. Ped. 1: 222. 1785.

Coll. : Lyon 264, Jefferson. July.

Lactuca scariola L. Sp. Pl. Ed. 2, 1119. 1763.

Coll. : Lyon 374, Jefferson. Aug.

Lactuca ludoviciana (NUTT.) DC. Prodr. 7: 141. 1838.

Coll. : Lyon 285, 445, 447, Jefferson. July.

Previously reported only by Sheldon from Sleepy Eye.

Lactuca sagittifolia ELL. Bot. S. C. & Ga. 2: 253. 1821-24.

Coll. : Lyon 363, Jefferson. Aug.

Previously reported only by Sheldon from Lake Benton.

Lactuca floridana (L.) GAERTN. Fruct. & Sem. 2: 362. 1791.

Coll. : Lyon 334, 410, 423, Winnebago. Aug.

Hieracium umbellatum L. Sp. Pl. 804. 1753.

Coll. : Wheeler 627, Brownsville. Aug.

No authentic specimens previously reported from Minnesota.

Hieracium canadense MICHX. Fl. Bor. Am. 2: 86. 1803.

Coll. : Wheeler 443, Jefferson; Lyon 311, 341, Wheeler 510, Winnebago. Aug.

Hieracium scabrum MICHX. Fl. Bor. Am. 2: 86. 1803.

Coll. : Wheeler 485, Lyon 336, 405, 462, Jefferson; Wheeler 513, Winnebago; Wheeler 636, Brownsville.

Nabalus albus (L.) HOOK. Fl. Bor. Am. 1: 294. 1833.

Coll. : Wheeler 521, Winnebago. Aug.

AMBROSIACEÆ.

Ambrosia trifida L. Sp. Pl. 987. 1753.

Coll. : Wheeler 417, Jefferson. July.

Ambrosia artemisiæfolia L. Sp. Pl. 987. 1753.

Coll. : Lyon 495, Jefferson. Aug.

Xanthium canadense MILL. Gard. Dict. Ed. 8, No. 2. 1768.

Coll. : Lyon 424, Winnebago. Aug.

COMPOSITÆ.

- Vernonia fasciculata* MICHX. Fl. Bor. Am. 2: 94. 1803.
Coll.: Wheeler, 408, Jefferson. July.
- Eupatorium purpureum* L. Sp. Pl. 838. 1753.
Coll.: Lyon 347, Wheeler 563, Jefferson; Wheeler 519, Winnebago. Aug.
- Eupatorium altissimum* L. Sp. Pl. 837. 1753.
Coll.: Wheeler 533, 568, Jefferson; Lyon 412, Winnebago. Aug.
- Eupatorium perfoliatum* L. Sp. Pl. 838. 1753.
Coll.: Wheeler 493, Jefferson. Aug.
- Eupatorium ageratoides* L. f. Suppl. 355. 1781.
Coll.: Lyon 293, Jefferson. July.
- Kuhnia eupatorioides* L. Sp. Pl. Ed. 2, 1662. 1763.
Coll.: Wheeler 532, 555, 571, Lyon 370, 381, 489, Jefferson. Aug.
- Lacinaria cylindracea* (MICHX.) KUNTZE, Rev. Gen. Pl. 349. 1891.
Coll.: Lyon 181, Crooked Creek; 290, Jefferson. July.
- Lacinaria pycnostachya* (MICHX.) KUNTZE, Rev. Gen. Pl. 349. 1891.
Coll.: Lyon 265, Jefferson. July.
- Lacinaria scariosa* (L.) HILL, Veg. Syst. 4: 49. 1762.
Coll.: Lyon 313, Winnebago. Aug.
- Solidago flexicaulis* L. Sp. Pl. 879. 1753.
Coll.: Lyon 371½, 484, Jefferson; Wheeler 590, Crooked Creek. Aug.
- Solidago hispida* MUHL.; WILLD. Sp. Pl. 3: 2063. 1804.
Coll.: Lyon 294, Jefferson. July.
- Solidago erecta* PURSH, Fl. Am. Sept. 542. 1814.
Coll.: Lyon 371, Jefferson. Aug.
Reported from Stearns County but no Minnesota specimens previously seen.
- Solidago speciosa* NUTT. Gen. 2: 160. 1818.
Coll.: Lyon 467, Jefferson. Aug.
- Solidago ulmifolia* MUHL.; WILLD. Sp. Pl. 3: 2060. 1804.
Coll.: Lyon 433, Winnebago. Aug.
- Solidago serotina* AIT. Hort. Kew. 3: 211. 1789.
Coll.: Lyon 360, Jefferson. Aug.

- Solidago missouriensis** NUTT. Journ. Acad. Phila. 7: 32. 1834.
Coll.: Lyon 289, 373, Jefferson. July.
- Solidago canadensis** L. Sp. Pl. 878. 1753.
Coll.: Lyon 330, Winnebago. Aug.
- Solidago nemoralis** AIT. Hort. Kew. 3: 213. 1789.
Coll.: Wheeler 611, Brownsville. Aug.
- Solidago rigida** L. Sp. Pl. 880. 1753.
Coll.: Lyon 372, 403, Jefferson. Aug.
- Euthamia graminifolia** (L.) NUTT. Gen. 2: 162. 1818.
Coll.: Wheeler 565, Jefferson. Aug.
- Boltonia asteroides** (L.) L'HER. Sert. Angl. 27. 1788.
Coll.: Lyon 385, Wheeler 561, Jefferson. Aug.
- Aster drummondii** LINDL. in Hook. Comp. Bot. Mag. 1: 97. 1835.
Coll.: Wheeler 551, Jefferson; Lyon 426, Winnebago. Aug.
- Aster sagittifolius** WILLD. Sp. Pl. 3: 2035. 1804.
Coll.: Lyon 402, 451, Jefferson; Wheeler 583, 599, Crooked Creek. Aug.
- Aster patens** AIT. Hort. Kew. 3: 201. 1789.
Coll.: Wheeler 584, Crooked Creek. Aug.
- Aster novæ-angliæ** L. Sp. Pl. 875. 1753.
Coll.: Lyon 425, Winnebago; 482, Jefferson. Aug.
- Aster puniceus** L. Sp. Pl. 875. 1753.
Coll.: Wheeler 585, Crooked Creek. Aug.
- Aster prenanthoides** MUHL.; Willd. Sp. Pl. 3: 2046. 1804.
Coll.: Wheeler 518, Lyon 409, Winnebago; Wheeler 582, Crooked Creek. Aug.
- Aster lævis** L. Sp. Pl. 876. 1753.
Coll.: Wheeler 509, Lyon 435, Winnebago; Wheeler 616, 626, Brownsville. Aug.
- Aster sericeus** VENT. Hort. Cels. *pl.* 33. 1800.
Coll.: Wheeler 218, Jefferson. June.
- Aster ptarmicoides** (NEES) T. & G. Fl. N. A. 2: 160. 1841.
Coll.: Lyon 441, Jefferson. Aug.
- Aster salicifolius** LAM. Encycl. 1: 306. 1783.
Coll.: Wheeler 552, Lyon 400, Jefferson; Lyon 427, Winnebago. Aug.

- Aster paniculatus** LAM. *Encycl.* 1: 306. 1783.
Coll.: Wheeler 540, Jefferson; 623, Brownsville. Aug.
- Erigeron pulchellus** MICHX. *Fl. Bor. Am.* 2: 124. 1803.
Coll.: Lyon 28, Winnebago. June.
- Erigeron annuus** (L.) PERS. *Syn.* 2: 431. 1807.
Coll.: Lyon 84, 420, 432, Winnebago; Wheeler 562, Jefferson. Aug.
- Erigeron ramosus** (WALT.) B.S.P. *Prel. Cat. N. Y.* 27. 1888.
Coll.: Wheeler 530, 572, Jefferson. Aug.
- Leptilon canadense** (L.) BRITTON, in *Brit. & Brown, Ill. Fl.* 3: 391. *f.* 3827. 1898.
Coll.: Lyon 303, Jefferson. Aug.
- Doellingeria umbellata pubens** (A. GRAY) BRITTON, in *Brit. & Brown, Ill. Fl.* 3: 392. 1898.
Coll.: Lyon 399, Jefferson; Wheeler 581, Crooked Creek. Aug.
- Antennaria plantaginifolia** (L.) RICHARDS. *App. Frank. Journ.* Ed. 2, 30. 1823.
Coll.: Lyon 23, Winnebago. June.
- Gnaphalium obtusifolium** L. *Sp. Pl.* 851. 1753.
Coll.: Lyon 338, 440, 465, Jefferson. Aug.
- Polymnia canadensis** L. *Sp. Pl.* 926. 1753.
Coll.: Wheeler 316, Mayville; Lyon 344, Jefferson. July, Aug.
- Silphium perfoliatum** L. *Sp. Pl. Ed.* 2, 1301. 1763.
Coll.: Lyon 215, 240, Crooked Creek. July.
- Silphium laciniatum** L. *Sp. Pl.* 919. 1753.
Coll.: Wheeler 297, Crooked Creek. July.
- Heliopsis helianthoides** (L.) B.S.P. *Prel. Cat. N. Y.* 28. 1888.
Coll.: Wheeler 614, Brownsville. Aug.
- Heliopsis scabra** DUNAL, *Mem. Mus. Paris*, 5: 56. *pl.* 4. 1819.
Coll.: Wheeler 330, Crooked Creek. July.
- Rudbeckia triloba** L. *Sp. Pl.* 907. 1753.
Coll.: Wheeler 502, Winnebago; 535, Jefferson. Aug.
Not previously reported from Minnesota. Infrequent, edges of thickets.
- Rudbeckia hirta** L. *Sp. Pl.* 907. 1753.
Coll.: Wheeler 301, 329, Crooked Creek; 613, Brownsville. July, Aug.

Rudbeckia laciniata L. Sp. Pl. 906. 1753.

Coll.: Lyon 232, Crooked Creek; Wheeler 542, Jefferson. .
July, Aug.

Ratibida pinnata (VENT.) BARNHART, Bull. Torr. Club, 24:
410. 1897.

Coll.: Wheeler 374, Crooked Creek. July.

Ratibida columnaris (SIMS) D. DON; Sweet, Brit. Fl. Gard. 2:
361. 1838.

Coll.: Wheeler 536, Jefferson. Aug.

Not previously reported from eastern Minnesota. Rare, dry
banks.

Helianthus atrorubens L. Sp. Pl. 906. 1753.

Coll.: Wheeler 634, Brownsville. Aug.

Not previously reported from Minnesota. The only previous
collection known is that of Sandberg, Hennepin Co., Aug.,
1889.

Helianthus scaberrimus ELL. Bot. S. C. & Ga. 2: 423. 1824.

Coll.: Wheeler 445, 528, Jefferson; 579, Crooked Creek.
Aug.

Helianthus occidentalis RIDDELL, Suppl. Cat. Ohio Pl. 13.
1836.

Coll.: Wheeler 444, Lyon 322, Jefferson; Wheeler 511,
Winnebago. Aug.

Helianthus grosse-serratus MARTENS, Sel. Sem. Hort. Loven.
1839.

Coll.: Wheeler 549, Jefferson. Aug.

Helianthus divaricatus L. Sp. Pl. 906. 1753.

Coll.: Wheeler 566, 576, Jefferson; 630 Winnebago.
Aug.

Helianthus trachelifolius MILL. Gard. Dict. Ed. 8, No. 7.
1768.

Coll.: Wheeler 603, Crooked Creek. Aug.

Helianthus strumosus L. Sp. Pl. 905. 1753.

Coll.: Wheeler 632, Brownsville. Aug.

Helianthus tuberosus L. Sp. Pl. 905. 1753.

Coll.: Wheeler 567, Jefferson. Aug.

Coreopsis palmata NUTT. Gen. 2: 180. 1818.

Coll.: Lyon 160, Winnebago; 182, Crooked Creek.
June, July.

Bidens lævis (L.) B.S.P. Prel. Cat. N. Y. 29. 1888.

Coll. : Wheeler 560, Jefferson. Aug.

Bidens comosa (A. GRAY) WIEGAND, Bull. Torr. Club, 24 : 436. 1897.

Coll. : Wheeler 544, 559, Jefferson ; 628, Brownsville. Aug.

Not previously reported from Minnesota. The only previously collected authentic specimen seen from Minnesota is that of Aiton, Minneapolis, Sept., 1890.

Common on the low wet ground throughout.

Bidens frondosa L. Sp. Pl. 832. 1753.

Coll. : Wheeler 541, Jefferson. Aug.

Helenium autumnale L. Sp. Pl. 886. 1753.

Coll. : Wheeler 487, Jefferson. Aug.

Achillea millefolium L. Sp. Pl. 899. 1753.

Coll. : Wheeler 398, Jefferson. July.

Anthemis cotula L. Sp. Pl. 894. 1753.

Coll. : Lyon 269, 284, Jefferson. July.

Chrysanthemum leucanthemum L. Sp. Pl. 888. 1753.

Coll. : Lyon 231, Crooked Creek. July.

Tanacetum vulgare L. Sp. Pl. 844. 1753.

Coll. : Lyon 416, Winnebago. Aug.

Artemisia dracunculoides PURSH, Fl. Am. Sept. 742. 1814.

Coll. : Wheeler 370, Crooked Creek ; Lyon 369, 390, Jefferson. Aug.

Artemisia serrata NUTT. Gen. 2 : 142. 1818.

Coll. : Lyon 383, Jefferson. Aug.

Artemisia gnaphalodes NUTT. Gen. 2 : 143. 1818.

Coll. : Wheeler 550, Jefferson ; Lyon 419, Winnebago. Aug.

Erechtites hieracifolia (L.) RAF. DC. Prodr. 6 : 294. 1837.

Coll. : Lyon 342, 446, Jefferson ; Wheeler 621, Brownsville. Aug.

Mesadenia reniformis (MUHL.) RAF. New Fl. 4 : 79. 1836.

Coll. : Wheeler 273, Crooked Creek. June.

Senecio plattensis NUTT. Trans. Am. Phil. Soc. (II.) 7 : 413. 1841.

Coll. : Wheeler 100, Winnebago. June.

Not previously reported from Minnesota. The only previous known collection in this state is that of Prof. Conway MacMillan from Hennepin county.

Senecio aureus L. Sp. Pl. 870. 1753.

Coll. : Lyon 54, Winnebago. June.

Arctium minus SCHK. Bot. Handb. 3: 49. 1803.

Coll. : Wheeler 432, Jefferson. July.

Carduus lanceolatus L. Sp. Pl. 821. 1753.

Coll. : Lyon 242, Crooked Creek. July.

Carduus discolor (MUHL.) NUTT. Gen. 2: 130. 1818.

Coll. : Lyon 377, Jefferson. Aug.

Carduus odoratus (MUHL.) PORTER. Mem. Torr. Club, 5: 345. 1894.

Coll. : Herb. Wheeler 25, Winnebago. July.

DESCRIPTION OF PLATE XXI.

A. Juniper point, Crooked creek valley. Southwest side of bluff dotted with junipers and white birch.

B. Base of bluff, upper Winnebago valley. White pine, juniper and white birch along the upper edge of cliff.

PLATE XXII.

A. Western slope of bluff. The woods follow the areas of greatest moisture *i. e.*, the ravines and foot of bluff and the water course in the valley. The shrubs in the valley mark the course of a small creek and are principally willows and dogwoods.

B. Southern slope of bluff showing the steep bare slopes and the thickly wooded ravine. The extreme base of the bluff to the left has been cleared of timber for cultivation.

PLATE XXIII.

A. Grove of white birch.

B. Swamp vegetation. *Spathyema* growing in the shade of black ash and yellow birch.

PLATE XXIV.

A. Group of coffee trees (*Gymnocladus*).

B. White birch and juniper on side of bluff.

PLATE XXV.

A. Slough and island vegetation. *Sagittarias* and *Nelumbo* are the most prominent water plants, and willows and cottonwood on the island in the background.

B. General view of river valley from bluffs on Minnesota side of river. The river channel is on the farther side at the base of the Wisconsin bluffs.

PLATE XXVI.

A. General view of Winnebago valley showing general distribution of forest vegetation. The valley is almost entirely cleared for cultivation.

B. South branch of Winnebago valley. The northern slope of bluff is densely wooded.

PLATE XXVII.

A. *Lilium canadense* growing in moist meadow of creek valley.

B. Pond vegetation. Yellow pond-lily with water grasses and sedges.



PLATE XXI.



PLATE XXII.



PLATE XXIII.



PLATE XXIV.



PLATE XXV.

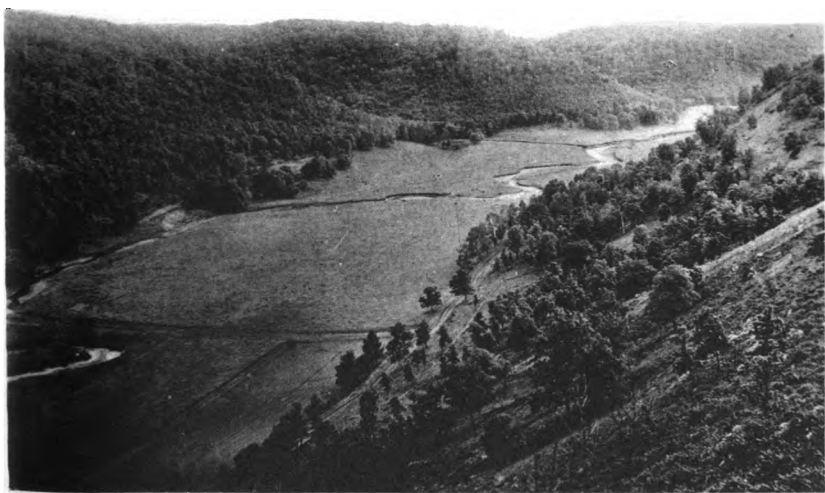


PLATE XXVI.



PLATE XXVII.

